



Checklist of the dragonflies and damselflies from Guyana (Insecta: Odonata), with new records from the country

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Abstract: The first checklist of the odonates from Guyana is presented, including 46 new species records. Literature sources are provided for all species and for the new records full locality data, color scans or field photographs, taxonomic and biological notes, and maps for those species whose distribution range is increased considerably.

Key words: species inventory; range extension; Guiana Shield; Kaieteur Plateau; Konawaruk watershed; Upper Berbice watershed; CEIBA; Karanambu; Iwokrama

INTRODUCTION

Guyana is probably the least well known country in northern South America regarding the odonate fauna. Erichson was the first author to address the odonates from Guyana specifically, describing several species based on material from that country (ERICHSON *in* SCHOMBURGK 1848). E.B. Williamson, together with his father L.A. Williamson and his friend B.J. Rainey, collected odonates in Rockstone and Wismar in the Upper Demerara-Berbice Region and Tumatumari in Potaro-Siparuni Region during less than a month in 1912, and in the course of several years after that collecting trip described numerous new species from Guyana based on their findings (WILLIAMSON 1915, 1916, 1917, 1919, 1920, 1923a, 1923b; WILLIAMSON & WILLIAMSON 1924, 1930). More than 40 records and descriptions of libellulids by RIS (1919) were also based on Williamson's specimens from Guyana. CALVERT (1948) published a paper on the odonates from Kartabo in the Cuyuni-Mazaruni Region. Subsequently there have been some additional records from the country in descriptions and revisions in the taxonomic literature, but otherwise Guyana was *terra incognita* for odonates until recently.

Three surveys in the central western and eastern portions of the country that took place in 2014 (Biodiversity Assessment Team surveys of the Kaieteur Plateau-upper Potaro area, Konawaruk River system, and upper Berbice watershed) increased the number of known odonate species from 192 to 225. Examination of specimens in

collections added another five new records, and a fourth expedition in 2015 (CEIBA, Karanambu, and Iwokrama) registered an additional eight, resulting in a total of 238 species recorded from Guyana to date.

MATERIALS AND METHODS

The following checklist was compiled based on the first reliable literature record of a particular species from the country, indicated in square brackets ([]) next to each species, from examined specimens in collections not yet recorded in the published literature, and from material collected in surveys of the Kaieteur Plateau-upper Potaro area, Konawaruk River system, and upper Berbice watershed in 2014, and CEIBA, Karanambu, and Iwokrama in 2015. The 46 new country records are highlighted in bold, and are accompanied by full locality data, distributional, taxonomic and/or biological notes, and color scans or field pictures. Distribution maps are provided for those species whose range in the Guiana shield or South America has increased considerably as a consequence of these new records (Figs. 51–57). Acronyms for collections where studied specimens are deposited are as follows:

BMNH: British Museum of Natural History, London, UK

CSBD: Centre for the Study of Biological Diversity, University of Guyana, Guyana

CSCA: California State Collection of Arthropods, Sacramento, California, USA

DRP: Dennis R. Paulson Collection, Seattle, Washington, USA

FSCA: Florida State Collection of Arthropods, Gainesville, Florida, USA

MZLU: Department of Biology, Evolutionary Ecology Unit, Lund University, Lund, Sweden

RWG: Rosser W. Garrison Collection, Sacramento, California, USA

USNM: National Museum of Natural History, Smithsonian Institution, Washington, DC, USA

The classification followed is that outlined in DIJKSTRA et al. (2013). Color scans were performed with an Epson Perfection 4870 scanner. Maps were created electronically with ArcView 9.1.

RESULTS

Zygoptera

Lestidae

Lestes curvatus Belle, 1997. 1 male (Fig. 1): Guyana, Upper Takutu-Upper Essequibo Region, Karanambu (04°19'08" N, 058°19'12" W), 11-i-2015, B. Willink & E.I. Svensson leg. [CSCA]. Like other representatives of its family this species inhabits temporary lentic environments, being here recorded from Guyana for the first time based on five specimens observed at a pond and in the forest. *Lestes curvatus* was described based on specimens found in swampy areas in three localities of northern Suriname (BELLE 1997), and so far it has not been recorded in the literature from any additional localities. The current finding, together with unpublished records from collections (Peru, Madre de Dios Dept., Explorer's Inn on Río Tambopata, 30 km SW Puerto Maldonado, 14–16-xii-2003, T.H. Ogden et al. leg. [DRP]; Peru, Loreto Dept., Aguas Negras, 14–13-iii-1994, J. Louton leg. [RWG]) from the lowland amazonian forest in northern and southern Peru, increases its known distribution range considerably (Fig. 51).

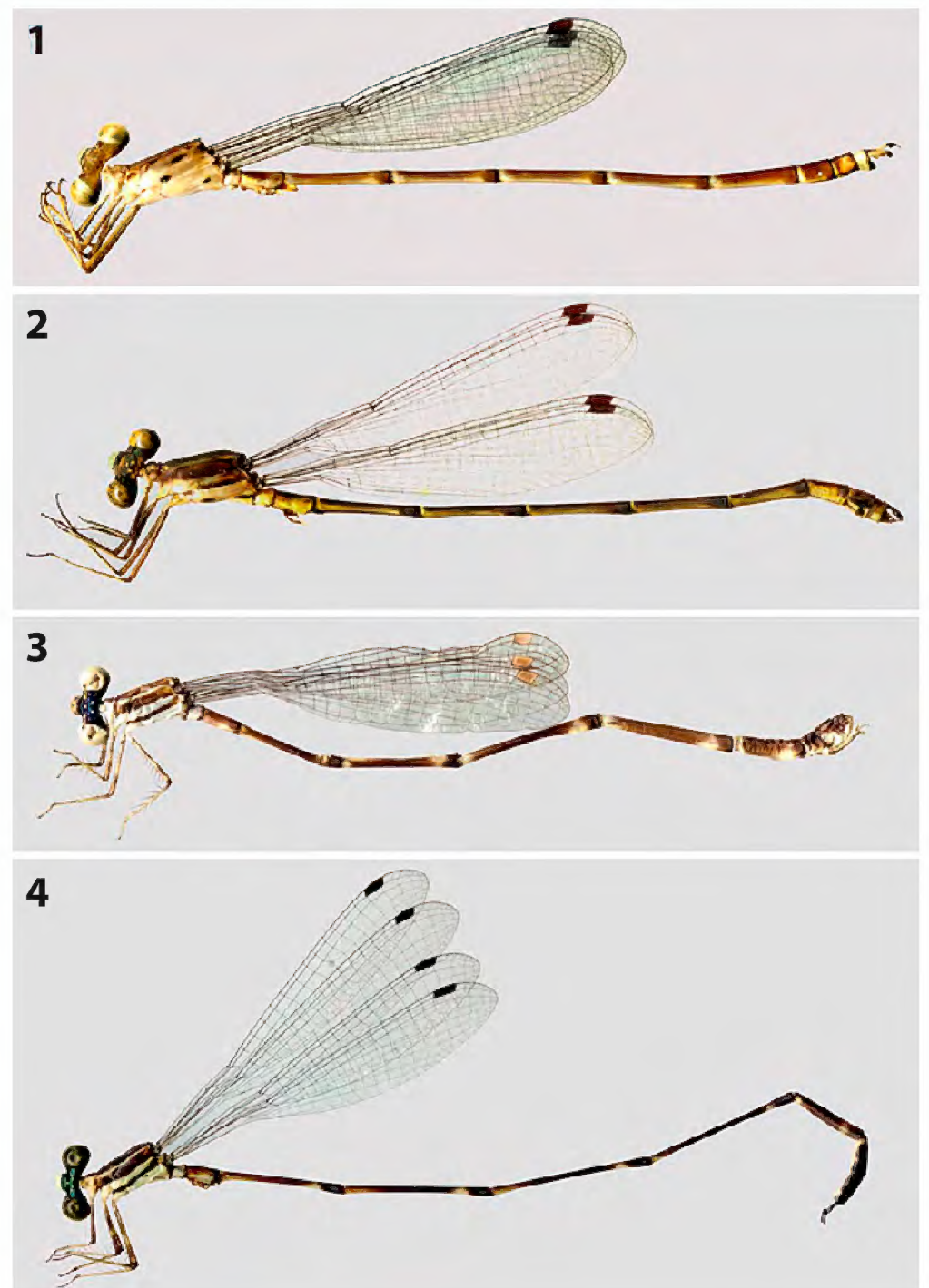
Lestes falcifer Sjöstedt, 1918. 4 males, 2 females (Fig. 2): Guyana, Potaro-Siparuni Region, Chenapau village, ponds (04°59'7" N, 059°34'45" W, 445 m), 17 & 23-iii-2014, N. von Ellenrieder leg. [CSBD; CSCA; RWG]. This species ranges from the Guiana Shield to the Amazon forest in Peru. It inhabits temporary lentic environments and adults were found perching in the vegetation surrounding small pits with water, about 1 m in diameter, enclosed within the forest.

Lestes tricolor Erichson in Schomburgk, 1848 [Erichson in Schomburgk 1848]

Perilestidae

Perilestes attenuatus Selys, 1886. 1 male, 2 females (Fig. 3): Guyana, Potaro-Siparuni Region, upper Potaro Camp to Bay Camp, Potaro River from boat (05°03'15" N, 059°39'49" W, 573 m), 20-iii-2014, N. von Ellenrieder leg.; East Berbice-Corentyne Region, sandy blackwater stream in primary forest (04°45'17" N, 058°00'24" W, 8 m), 28-ix-2014, N. von Ellenrieder & J. Archer leg.; same data but 01-x-2014 (04°45'45" N, 058°00'28" W, 16 m) [CSBD; CSCA]. This species, usually found perching high on trees along the shaded margins of rivers and blackwater creeks, is widely distributed in the Guiana and Amazonian forests from Venezuela to Bolivia.

Perilestes fragilis Hagen in Selys, 1862 [HAGEN in SELYS 1862]



Figures 1–4. 1. New record from Guyana: *Lestes curvatus*, habitus scan. Male from Karanambu. 2. New record from Guyana: *Lestes falcifer*, habitus scan. Male from Chenapau. 3. New record from Guyana: *Perilestes attenuatus*, habitus scan. Female from Berbice. 4. New record from Guyana: *Perilestes gracillimus*, habitus scan. Male from Muri Muri.

Perilestes gracillimus Kennedy, 1941. 1 male (Fig. 4): Guyana, Potaro-Siparuni Region, Muri Muri Camp, creek (05°16'39" N, 059°02' W, 523 m), 25 & 26-iii-2014, N. von Ellenrieder & W. Washington leg. [CSCA]. Recorded so far from creeks in lowland Amazon forest from Peru (KENNEDY 1941), Brazil (LENCIONI 2005), and Suriname (VON ELLENRIEDER 2011). It was found at a black water creek perching high on a tree over the water.

Perilestes kahli Williamson & Williamson, 1924: 1 male (Fig. 5), Guyana, Potaro-Siparuni Region, Iwokrama (04°19'08" N, 058°51'41" W), 23-i-2015, B. Willink & E.I. Svensson leg. [CSCA]. The only specimen seen was found at a forest stream. This species is widely distributed in the Amazonian forest from Venezuela to Bolivia, and the present finding extends its range eastwards into the forests of the Guiana Shield (Fig. 51).

Platystictidae

Palaemnema brevignoni Machet, 1990. 8 males, 1 female (Fig. 6). Guyana, Bay Camp to Chenapau, creek (05°00'36" N, 059°38'11" W, 470 m), 18-iii-2014, N. von Ellenrieder leg.; same data but (05°00'10" N, 059°37'13" W, 470 m)



Figures 5, 6. 5. New record from Guyana: *Perilestes kahli*, habitus scan. Male from Iwokrama. 6. New record from Guyana: *Palaemnema brevignoni*, field photograph (NvE). Teneral female from Chenapau.

[CSBD; CSCA; RWG]. Only teneral adults of this species were found. Since the survey took place at the end of the dry season spanning from February to April, this is an indication that it is most likely a rainy season species. Described from French Guiana and also known from Venezuela, this record in an intervening area was not unexpected.

Amphipterygidae

Rimanella arcana (Needham, 1933) [GELJSKES 1940]

Calopterygidae

Hetaerina caja dominula Hagen in Selys, 1853 [ERICHSON in SCHOMBURGK 1848 as *H. caja*; see HAGEN in SELYS 1853]

Hetaerina erythrokalamus Garrison, 1990 [GARRISON 1990]

Hetaerina laesa Hagen in Selys, 1853 [WILLIAMSON 1923a]

Hetaerina moribunda Hagen in Selys, 1853 [WILLIAMSON 1923a]

Hetaerina mortua Hagen in Selys, 1853 [HAGEN in SELYS 1853]

Iridictyon myersi Needham & Fisher, 1940 [NEEDHAM & FISHER 1940]

Iridictyon trebbau Rácenis, 1968 [NEEDHAM & FISHER 1940 as *I. myersi* in part; see RÁCENIS 1968]

Mnesarete cupraea (Selys, 1853) [GARRISON 2006]

Dicteriadiidae

Heliocharis amazona (Selys, 1853) [CALVERT 1948 as *Dicterias cothurnata*]

Megapodagrionidae

Dimeragrion percubitale Calvert, 1913 [CALVERT 1913]

Heteragrion ictericum Williamson, 1919 [WILLIAMSON 1919]

Heteragrion pemon De Marmels, 1987. 15 males, 1 female (Fig. 7): Guyana, Potaro-Siparuni Region, Bay Camp to Chenapau, creek (05°00'37" N, 059°38'11" W, 470 m), 18-iii-2014, N. von Ellenrieder leg.; same data but (05°00'09" N, 059°36'56" W, 461 m); same data but Muri Muri Camp, creek (05°16'39" N, 059°31'02" W, 523 m), 25 & 26-iii-2014, N. von Ellenrieder & W. Washington leg; same data but Elinkwa, creek (05°08'55" N, 059°28'28" W, 438 m), 28-iii-2014 [CSBD; CSCA; RWG]. Previously known only from Bolivar State in Venezuela (DE MARMELS 1987; Fig. 51). Adults were found perching on tips of low twigs along forest trails.

Heteragrion silvarum Sjöstedt, 1918 [WILLIAMSON 1919 as *H. melanurum*]

Note. DE MARMELS (1987) examined the holotype of *Heteragrion silvarum* Sjöstedt, 1918, and commented on its similarity with *H. melanurum* described from Guyana, from which the holotype differs only by the absence of a dark dash between the eye and the base of the antenna. Examined specimens of *H. silvarum* from Brazil show variability in the extension of the dark areas on the head and spots in that position, indicating that these two names most likely represent synonyms, and therefore, following LENCIONI (2013) the older name *H. silvarum* is used here.

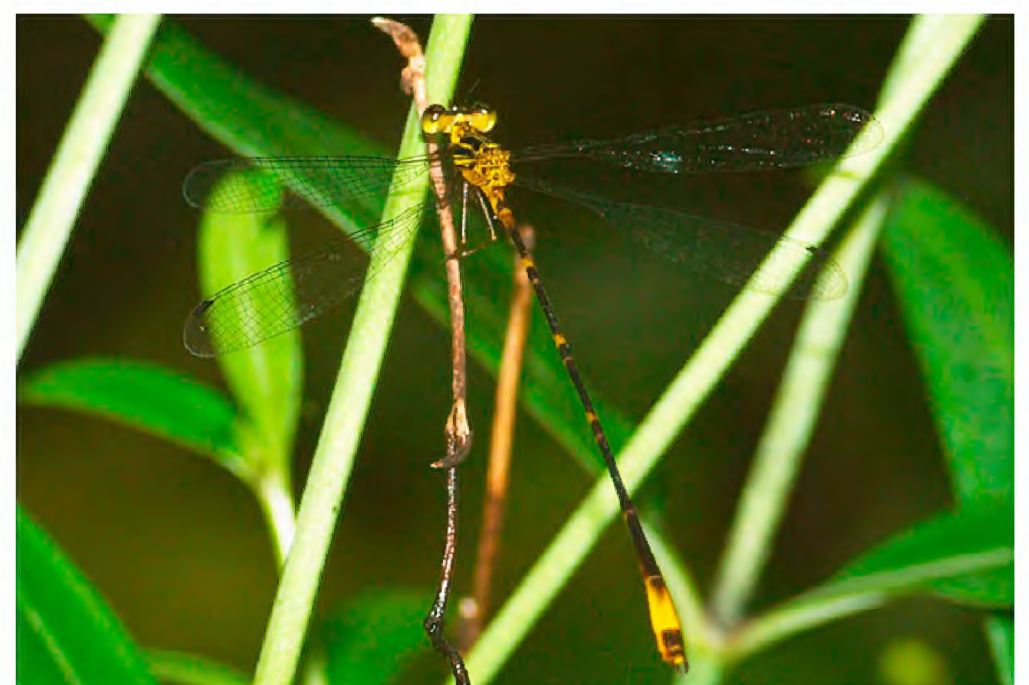


Figure 7. New record from Guyana: *Heteragrion pemon*, field photograph (NvE). Male from Chenapau.



Figure 8. New record from Guyana: *Chalkothore montgomeryi*, habitus scan. Female from Tukait.

Heteragrion simulatum Williamson, 1919 [WILLIAMSON 1919]

Megapodagrion megalopus (Selys, 1862) [CALVERT 1948]

Oxystigma cyanofrons Williamson, 1919 [WILLIAMSON 1919]

Oxystigma petiolatum (Selys, 1862) [WILLIAMSON 1919]

Polythoridae

Chalkothore montgomeryi (Rácenis, 1968). 4 females (Fig. 8): Guyana, Potaro-Siparuni region, Bay Camp to Chenapau, creek & river (05°00'9" N, 059°36'56" W, 461 m), 18-iii-2014, N. von Ellenrieder leg.; same data but Elinkwa, creek (05°08'55" N, 059°28'28" W, 438 m), 28-iii-2014; same data but Tukeit Trail, bedrock creek and associated marshy areas (05°11'53" N, 059°27'48" W, 160 m), 29-iii-2014, N. von Ellenrieder, P. Benjamin & F. Michelangeli leg. [CSBD; CSCA; RWG]. This monotypic genus was thus far known only from small rivers and backwater creeks in forests and tepuian shrubberies above 1,000 m in southern Venezuela (RÁCENIS 1968; DE MARMELS 1988c, 1990a). The larvae, described by DE MARMELS (1988c), were found under stones in fast running portions of the streams. The present finding at creeks located at 160 to 470 m considerably increases its known range of altitude and distribution within the Guiana Shield (Fig. 52).

***Euthore* sp.** [BICK & BICK 1992 as *E. hyalina*]

Note. BICK & BICK (1992) reported *E. hyalina* (Selys, 1853) from Venezuela, Colombia, Guyana and Peru. DE MARMELS (2010) considered the record from Venezuela as highly questionable and stated that *E. hyalina* is likely restricted to Colombia. The male from Demerara on which the Guyanese record by BICK & BICK (1992) was based, deposited at FSCA, was kindly photographed by Bill Mauf-ray at our request. According to the photograph, wings are not entirely hyaline, as it would be expected for *E. hyalina*, having distal third slightly infumated preceded by an opaque area. Species concepts in this genus are unclear

(GARRISON et al. 2010) and available keys (BICK & BICK 1992) are based solely on wing color without taking into account intraspecific and age related variability; a revision of the group is necessary to clarify species definitions and distributions.

Polythore picta (Rambur, 1842) [BICK & BICK 1985]

Coenagrionidae

Acanthagrion abunae Leonard, 1977 [LEONARD 1977]

Acanthagrion adustum Williamson, 1916 [WILLIAMSON 1916]

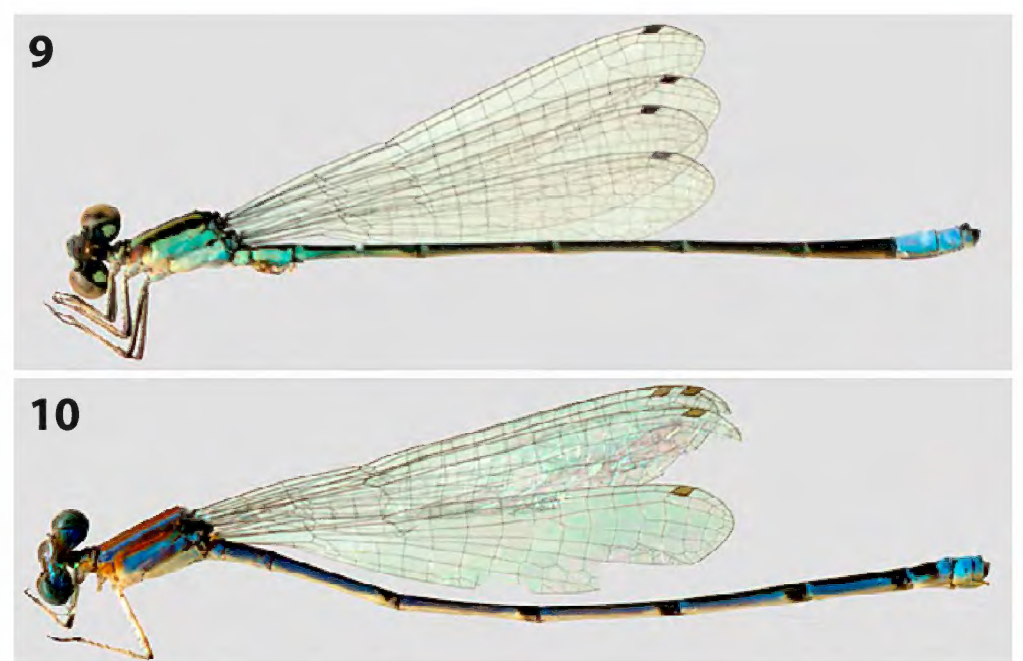
Acanthagrion apicale Selys, 1876 [LEONARD 1977]

Acanthagrion ascendens Calvert, 1909 [LEONARD 1977]

Acanthagrion indefensum Williamson, 1916 [WILLIAMSON 1916]

Acanthagrion inexpectum Leonard, 1977. 12 males (Fig. 9): Guyana, Potaro-Siparuni Region, Konawaruk watershed, Blackwater Landing, stream on trail into lake (05°04'15" N, 059°12'46" W, 85 m), 11-ix-2014, R.W. Garrison & R. Mohabie leg.; same data but Iwokrama, roadside ponds, vegetated (mostly grasses) and open (04°15'50" N, 058°53'10" W), 19-i-2015, B. Willink & E.I. Svensson leg.; Demerara-Mahaica Region, CEIBA Biological Station, pool in forest stream (07°29'55" N, 059°13'12" W), 25-26-i-2015, B. Willink & E.I. Svensson leg. [CSBD; CSCA; MZLU; RWG]. This species was first described from the Canal Zone in Panama (LEONARD 1977) but it has since been found as far north as central Veracruz State in Mexico, south into Colombia and east into Venezuela and Suriname. MACHET (2004, 2006) recorded the species from French Guiana without a definite locality so its occurrence in Guyana is not surprising.

Acanthagrion fluviatile De Marmels, 1984: 1 female (Fig. 10), Guyana, Upper Takutu-Upper Essequibo Region, Karanambu (03°44'47" N, 059°18'53" W), 13-i-2015, B. Willink & E.I. Svensson leg. [MZLU]. The only specimen



Figures 9, 10. 9. New record from Guyana: *Acanthagrion inexpectum*, habitus scan. Male from Iwokrama. 10. New record from Guyana: *Acanthagrion fluviatile*, habitus scan. Female from Karanambu.



Figures 11–13. 11. New record from Guyana: *Acanthagrion minutum*, field photograph (EIS). Male from Karanambu. 12. New record from Guyana: *Acanthagrion minutum*, field photograph (EIS). Andromorphic female from Karanambu. 13. New record from Guyana: *Acanthagrion minutum*, field photograph (EIS). Heteromorphic female from Karanambu.

seen of this species was flying in the forest. This constitutes the first record of the species outside of Venezuela and within the Guiana Shield (Fig. 52).

Acanthagrion minutum Leonard, 1977: 1 male, 3 females (Figs. 11–13), Guyana, Upper Takutu-Upper Essequibo Region, Karanambu, pond in open grassland (03°46'57" N, 059°20'16" W), 12-i-2015, B. Willink & E.I. Svensson leg. [CSCA; MZLU]. This species was locally abundant, with a total of 75 specimens observed. Its known distribution range extends from Colombia and Venezuela to northern Argentina, and its occurrence in Guyana was expected.

Acanthagrion rubrifrons Leonard, 1977 [LEONARD 1977]

Acanthagrion truncatum Selys, 1876 [LENCIONI 2006, with no locality]. Here we confirm the presence of this species in Guyana based on a male from Cuyuni-Mazaruni Region, vicinity Imbaimadai, Mazaruni River near Chi Chi Falls, 26–29-vi-1971, A.J. & T.W. Donnelly leg., in DRP.

Aeolagrion dorsale (Burmeister, 1839) [BIAZO et al. 2012]

Argia azurea Garrison & von Ellenrieder, 2015 [GLOYD in CALVERT 1948 as *Argia* sp. B; see GARRISON & VON ELLENRIEDER 2015]

Argia deceptor Garrison & von Ellenrieder, 2015 [GARRISON & VON ELLENRIEDER 2015]

Argia fumigata Hagen in Selys, 1865 [HAGEN in SELYS 1865]

Argia gemella Garrison & von Ellenrieder, 2015 [GLOYD in CALVERT 1948 as *Argia* sp. C; see GARRISON & VON ELLENRIEDER 2015]

Argia guyanica Garrison & von Ellenrieder, 2015 [Garrison & von Ellenrieder 2015]

Argia insipida Hagen in Selys, 1865 [HAGEN in SELYS 1865]

Argia joallynae Garrison & von Ellenrieder, 2015 [GARRISON & VON ELLENRIEDER 2015]

Argia meiora Garrison & von Ellenrieder, 2015 [GLOYD in CALVERT 1948 as *Argia* sp. D; see GARRISON & VON ELLENRIEDER 2015]

Argia oculata Hagen in Selys, 1865 [GLOYD in CALVERT 1948 as *Argia* sp. A; see GARRISON & VON ELLENRIEDER 2015]

Argia palmata Garrison & von Ellenrieder, 2015 [GARRISON & VON ELLENRIEDER 2015]

Argia translata Hagen in Selys, 1865 [GARRISON & VON ELLENRIEDER 2015]

Bromeliagrion beebeanum (Calvert, 1948) [CALVERT 1948]

Epipleoneura capilliformis (Selys, 1886) [WILLIAMSON 1915 as *E. incusa*]

Epipleoneura demarmelsi von Ellenrieder & Garrison, 2008 [PESSACQ 2014]

Epipleoneura fuscaenea Williamson, 1915 [WILLIAMSON 1915]

Epipleoneura lamina Williamson, 1915 [WILLIAMSON 1915]

Epipleoneura pereirai Machado, 1964. 28 males, 1 female (Fig. 14): Guyana, Potaro-Siparuni Region, Upper Potaro Camp to Bay Camp, Potaro River (05°03'15" N, 059°39'49" W, 573 m), 20-iii-2014, N. von Ellenrieder leg; same data but Elinkwa, creek (05°08'55" N, 059°28'28" W, 438 m), 28-iii-2014, N. von Ellenrieder & W. Washington leg.; same data but Amacua, blind side river channel with abundant floating vegetation (05°09'10" N, 059°30'12" W, 440 m), 28-iii-2014 [CSBD; CSCA; RWG]. Recorded from rivers in lowland Amazon forest in Amapá and Pará States in Brazil (MACHADO 1964) and in Suriname (VON ELLENRIEDER 2011); its occurrence in Guyana extends its known distribution area within the Guiana Shield (Fig. 52). This was the most frequently encountered species of this genus during the Kaieteur-Potaro survey, common along the shaded margins of the Potaro River and larger creeks.

Epipleoneura spatulata Rácenis, 1960. 1 male (Fig. 15): Guyana, Demerara-Mahaica Region, CEIBA Biological Station, pool in forest stream (06°29'55" N, 058°13'12" W), 26-i-2015, B. Willink & E.I. Svensson leg. [MZLU]. Only one specimen of this species was found. This infrequently collected species was until recently known only from its type series from Venezuela (RÁCENIS 1960). The present finding constitutes the third known locality and, together with the record from Pará State in Brazil (Garrison et al. 2010), considerably extends the known distribution area of this species (Fig. 52).

Epipotoneura nehalennia Williamson, 1915 [WILLIAMSON 1915]



Figures 14–16. **14.** New record from Guyana: *Epipleoneura pereirai*, habitus scan. Male from Potaro River. **15.** New record from Guyana: *Epipleoneura spatulata*, habitus scan. Male from CEIBA Biological Station. **16.** New record from Guyana: *Ischnura fluviatilis*, habitus scan. Male from Plantain Island in Essequibo River.

Homeoura chelifera (Selys, 1876) [VON ELLENRIEDER 2008]

Ischnura capreolus (Hagen, 1861) [CALVERT 1903]

Ischnura fluviatilis (Selys, 1876). 3 males, 2 females (Fig. 16): Guyana, Upper Demerara-Berbice Region, Essequibo River, Plantain Island, 25-iii-1969, W.D. Duckworth & R.E. Dietz leg.; Demerara-Mahaica Region, CEIBA Biological Station, open pool in forest stream (06°29'55" N, 058°13'12" W), 26-i-2015, B. Willink & E.I. Svensson leg.; Potaro-Siparuni Region, Iwokrama, open pond (04°15'23" N, 058°54'08" W), 23-i-2015, B. Willink & E.I. Svensson leg. [CSCA; MZLU; RWG]. Widely distributed in South America extending from Venezuela to Argentina and Uruguay; its occurrence in Guyana was expected.

Ischnura hastata (Say, 1840). 2 males (Fig. 17): Guyana, Upper Takutu-Upper Essequibo Region, Karanambu, pond (03°46'57" N, 059°20'16" W), 15-i-2015, B. Willink & E.I. Svensson leg. [CSCA; MZUL]. This species is widely distributed from Canada through the US, Mexico, Middle America and Antilles, to Colombia, Venezuela, Surinam, French Guiana, and the Galapagos Islands in Ecuador, for which its presence in Guyana was expected.



Figures 17, 18. **17.** New record from Guyana: *Ischnura hastata*, habitus scan. Male from Karanambu. **18.** New record from Guyana: *Mesoleptobasis acuminata*, habitus scan. Male from Karanambu.

Leptobasis vacillans Hagen in Selys, 1877 [GARRISON & VON ELLENRIEDER 2010]

Mecistogaster linearis (Fabricius, 1776) [ERICHSON in SCHOMBURGK 1848]

Mecistogaster lucretia (Drury, 1773) [ERICHSON in SCHOMBURGK 1848]

Megaloprepus caerulatus (Drury, 1782) [CALVERT 1901]

Mesoleptobasis acuminata Santos, 1961. 2 males (Fig. 18): Guyana, Upper Takutu-Upper Essequibo Region, Karanambu, forest (03°44'47" N, 059°19'12" W), 10-i-2015, B. Willink & E.I. Svensson leg. [CSCA; MZUL]. A total of 11 specimens of this species were seen. *Mesoleptobasis acuminata* was so far known from the Amazon forest in Brazil and Peru, and this finding represents the first record of this species from the Guiana Shield (Fig. 53).

Mesoleptobasis cyanolineata (Wasscher, 1998) [WILLIAMSON 1915 as *Metaleptobasis* sp.; see WASSCHER 1998]

Metaleptobasis bicornis (Selys, 1877) [WILLIAMSON 1915 as *M. mauritia*; see VON ELLENRIEDER 2013]

Metaleptobasis brysonima Williamson, 1915 [WILLIAMSON 1915]

Metaleptobasis diceras (Selys, 1877) [VON ELLENRIEDER 2013]

Microstigma maculatum Hagen in Selys, 1860 [HAGEN in SELYS 1860]

Nehalennia minuta Selys in Sagra, 1857. 2 females (Fig. 19): Guyana, Upper Takutu-Upper Essequibo Region, Karanambu, forest (03°44'47" N, 059°19'12" W), 16-i-2015, B. Willink & E.I. Svensson leg. [CSCA; MZUL]. A total of four specimens of this species were seen. Its distribution spans from Mexico and the Caribbean south to Brazil, and it

is known from neighboring countries in the Guiana Shield, its presence in Guyana was expected.

Neoneura bilinearis Selys, 1860. 9 males, 2 females (Fig. 20): Guyana, East Berbice-Corentyne Region, Berbice River Camp, Berbice River (04°09'06" N, 058°13'44" W, 95 m), 22-ix-2014, R.W. Garrison & J. Archer leg.; same data but stream (04°09'04" N, 058°14'01" W, 83 m), 23-ix-2014; Potaro-Siparuni Region, Iwokrama, vegetated shoreline of Essequibo River (04°38'26" N, 058°39'26" W), 22-i-2015, B. Willink & E.I. Svensson leg.; Upper Takutu-Upper Essequibo Region, Karanambu, pool in open river (03°45'19" N, 059°17'51" W), 14-i-2015, B. Willink & E.I. Svensson leg. [CSCA; MZUL; RWG]. This olive green to blue and black damselfly is found across northern South America, with records from Suriname, Venezuela, northern Peru, and the northern half of Brazil (WASSCHER & VAN'T BOSCH 2013). WILLIAMSON's (1917) redescription of *N. bilinearis* and later records of this species from Guyana (GARRISON 1999; VON ELLENRIEDER 2009) correspond to *N. confundens* Wasscher & van't Bosch, 2013, and the true *N. bilinearis* remained unrecorded from Guyana until now. In Suriname, *N. bilinearis* is locally common at rivers and less frequent at creeks (WASSCHER & VAN'T BOSCH 2013); in the present study, it was found at the Berbice and Essequibo Rivers, where adults were cruising close to the water across the river, occasionally perching on overhanging vegetation, and at a stream in Berbice and a river in Karanambu.

Neoneura confundens Wasscher & van't Bosch, 2013 [WILLIAMSON 1917 as *N. bilinearis*; see WASSCHER & VAN'T BOSCH 2013]

Neoneura denticulata Williamson, 1917 [WILLIAMSON 1917]

Neoneura fulvicollis Selys, 1886. 1 male (Fig. 21): Guyana, Potaro Siparuni Region, Upper Potaro Camp to Bay Camp, Potaro River from boat (05°03'15" N, 059°39'49" W, 573 m), 20-iii-2014, N. von Ellenrieder leg. [CSBD]. So far known from Venezuela, southern Brazil, and northern Argentina (GARRISON 1999). The single adult found was perching on overhanging trees along the banks of the Potaro River.

Neoneura joana Williamson, 1917 [WILLIAMSON 1917]

Neoneura mariana Williamson, 1917 [WILLIAMSON 1917]

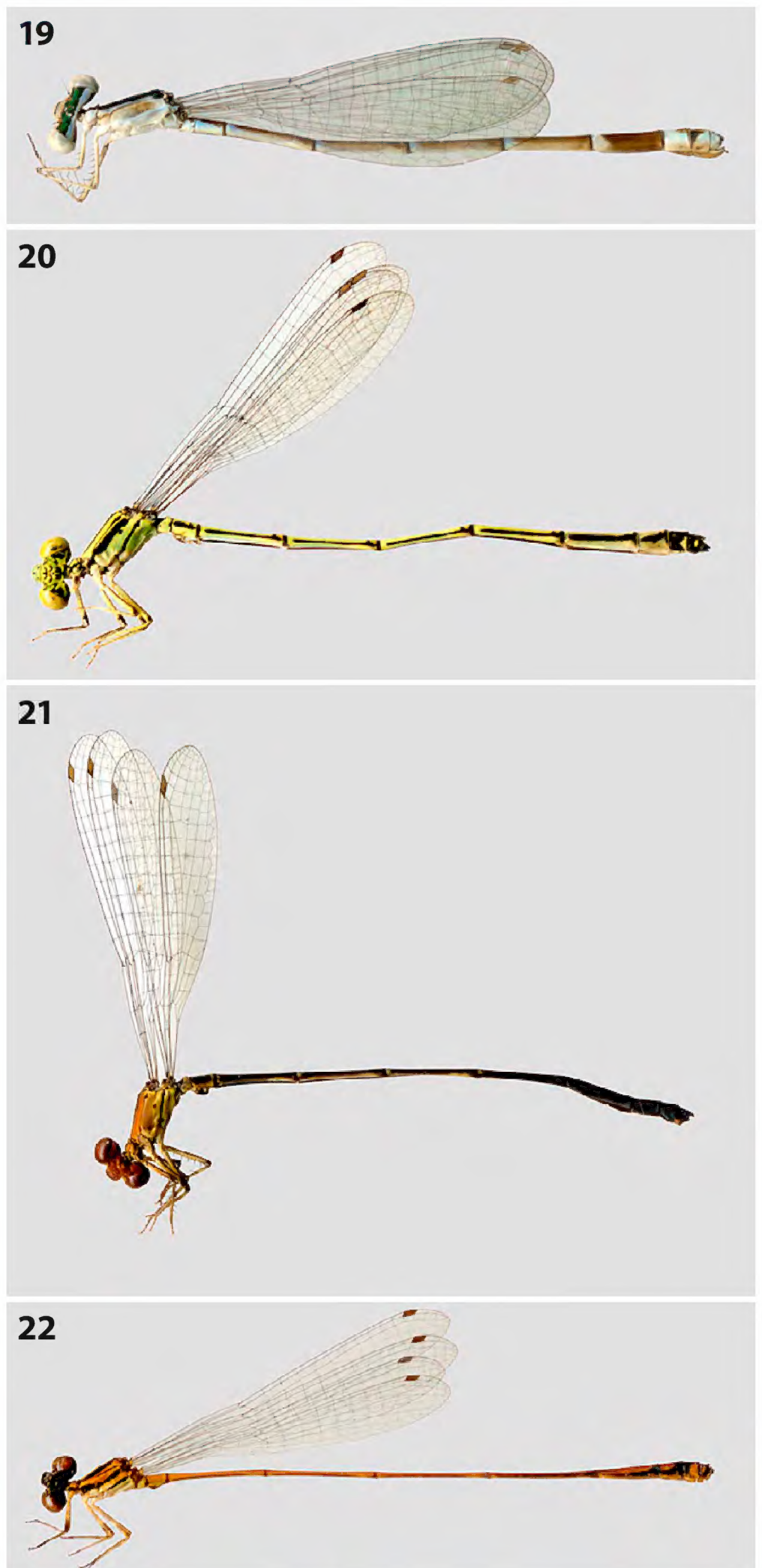
Neoneura myrthea Williamson, 1917 [WILLIAMSON 1917]

Neoneura rubriventris Selys, 1860 [WILLIAMSON 1917]

Phasmoneura exigua (Selys, 1886) [WILLIAMSON 1916 as *P. olmyra*]

Phoenicagrion flammeum (Selys, 1876) [WILLIAMSON 1917]

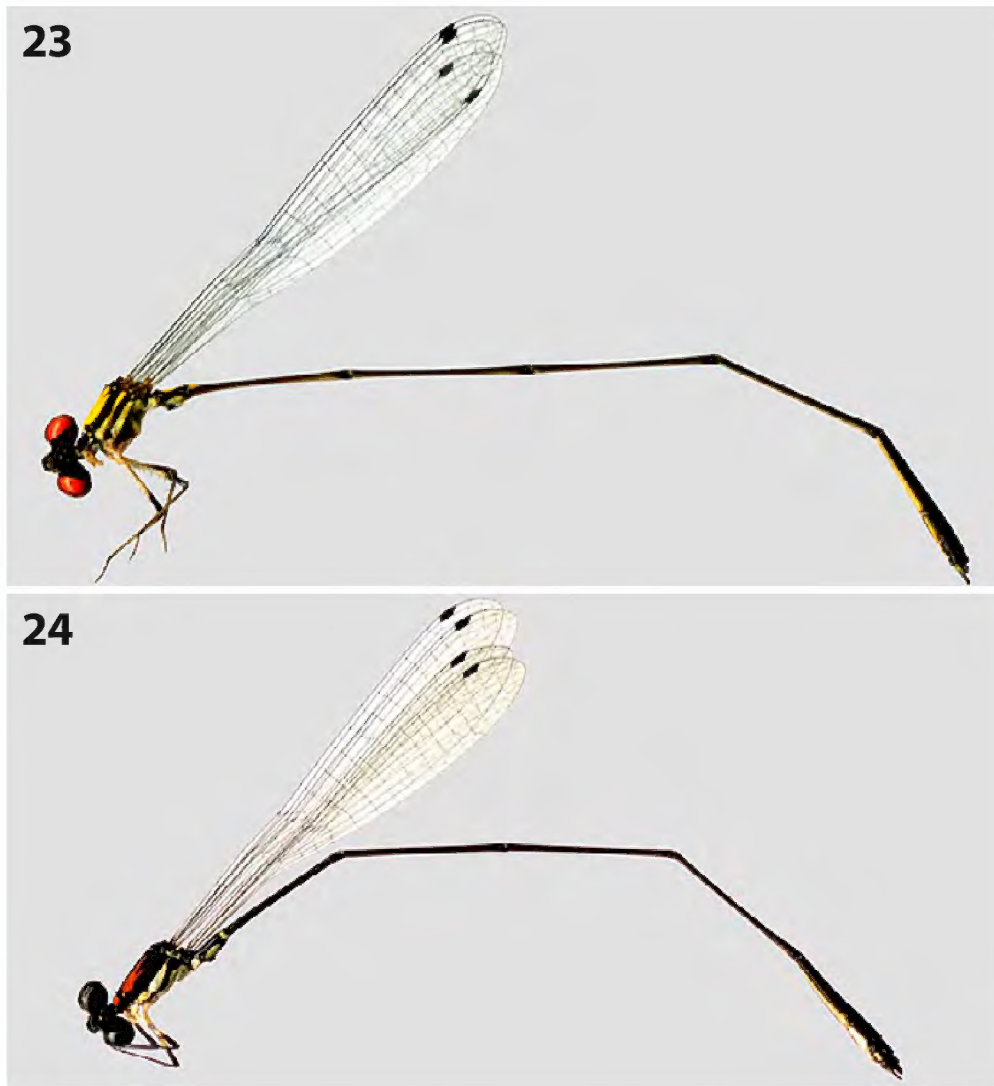
Protoneura amatoria Calvert, 1907. 9 males, 1 female (Fig. 22): Guyana, Upper Takutu-Upper Essequibo Region, Moco Moco, about 30 km E Lethem, Kanuku Mts., 3–6-iv-1994, O.S. Flint, Jr. leg [USNM]. The distribution of this species ranges from Guatemala to Venezuela and Trinidad on the East and Peru on the West (Fig. 53).



Figures 19–22. 19. New record from Guyana: *Nehalennia minuta*, habitus scan. Female from Karanambu. 20. New record from Guyana: *Neoneura bilinearis*, habitus scan. Male from Berbice. 21. New record from Guyana: *Neoneura fulvicollis*, habitus scan. Male from Potaro River. 22. New record from Guyana: *Protoneura amatoria*, habitus scan. Female from Moco-Moco.

Protoneura calverti Williamson, 1915 [WILLIAMSON 1915]

Protoneura paucinervis Selys, 1886. 4 males, 4 females (Fig. 23): Guyana, East Berbice-Corentyne Region, Berbice River Camp, Berbice River (04°9'6" N, 058°13'44" W, 95 m), 22-ix-2014, R.W. Garrison & J. Archer leg.; same data but stream (04°09'4" N, 058°14'01" W, 83 m), 23-ix-2014 [CSBD; CSCA; RWG]. So far recorded from Venezuela (DE MARMELS 2015) and from the Amazon region in Ecuador, Peru, and Brazil (PAULSON 2017). This finding considerably



Figures 23, 24. **23.** New record from Guyana: *Protoneura paucinervis*, habitus scan. Male from Berbice River. **24.** New record from Guyana: *Protoneura tenuis*, habitus scan. Male from Paramakatoi.

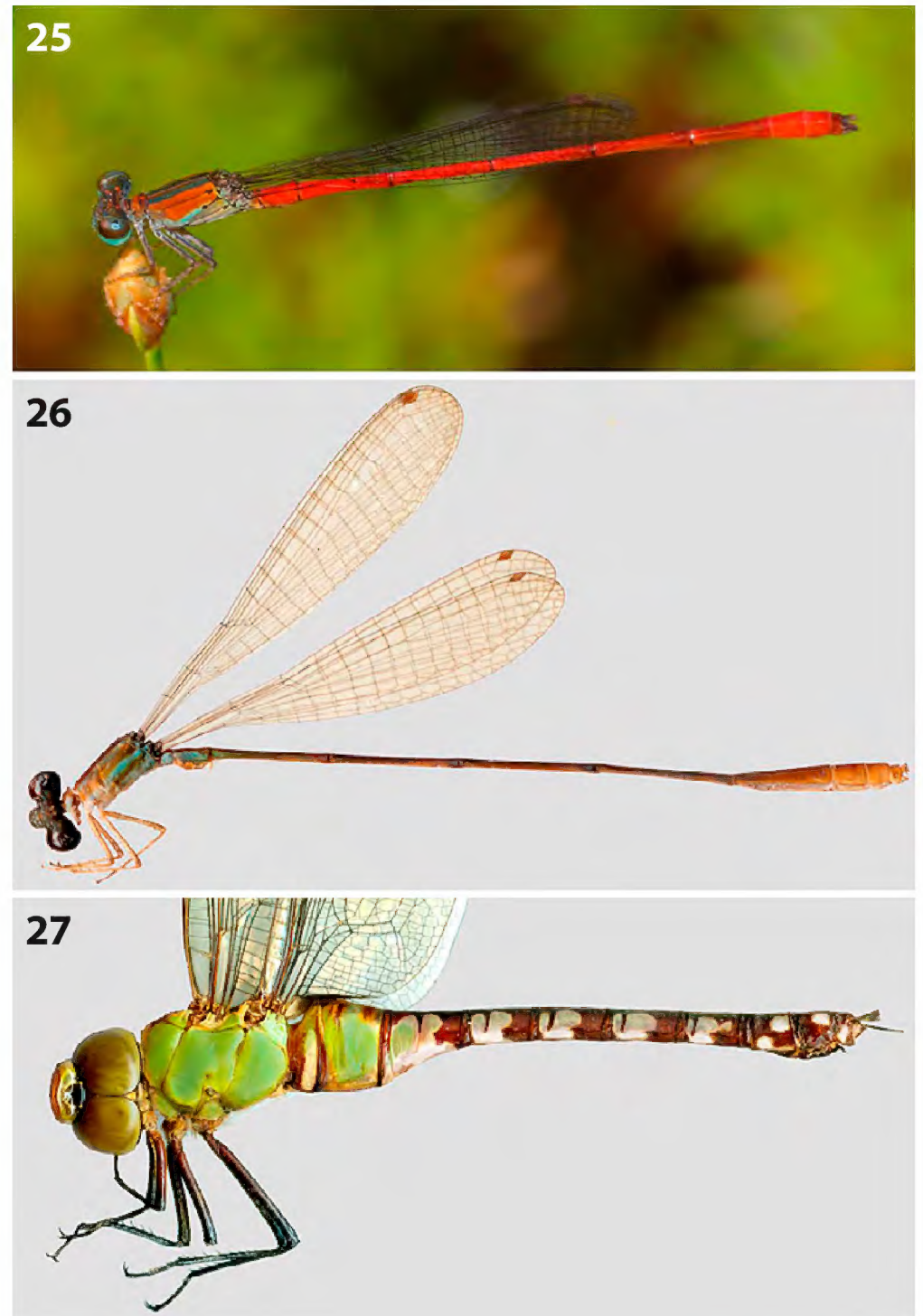
extends its distribution range to the east, and constitutes the first record within the Guiana Shield (Fig. 53). This colorful black and yellow red-eyed damselfly was found at the Berbice River and associated stream, where adults were perching, usually in tandem pairs, along the banks on dense overhanging vegetation or on emergent macrophytes, always close to water's surface.

Protoneura tenuis Selys, 1860. 3 males, 1 female (Fig. 24): Guyana, Potaro-Siparuni Region, Elinkwa, creek (05°08'55" N, 059°28'28" W, 438 m), 28-iii-2014, N. von Ellenrieder & W. Washington leg.; Amerindian village Paramakatoi (04°41'57" N, 059°42'48" W, 720 m), 25-viii-1997, O. S. Flint, Jr. leg. [CSCA; USNM]. Adults found hovering just above the water in dark creeks shaded by vegetation; the species had not yet been recorded from Guyana, even though it is known from neighboring countries and across the Amazonian forest.

Psaironeura tenuissima (Selys, 1886) [WILLIAMSON 1915 as *P. cerasina*; see MACHADO 1985]

Telebasis demarara (Williamson, 1917) [WILLIAMSON 1917]

Telebasis simulata Tennessen, 2002. 12 males, 1 female (Fig. 25): Guyana, Potaro-Siparuni Region, Kaieteur Top, pond with aquatic vegetation (05°10'38" N, 059°29'17" W, 470 m), 28-iii-2014, N. von Ellenrieder leg.; same data but Iwokrama, roadside ponds, vegetated (mostly grasses) and open (04°15'50" N, 058°53'10" W), 22 i 2015, B. Willink & E.I. Svensson leg.; Upper Demerara-Berbice Region, sandy blackwater stream with open canopy and pond with



Figures 25–27. **25.** New record from Guyana: *Telebasis simulata*, field photograph (NvE). Male from Kaieteur. **26.** New record from Guyana: *Tuberculobasis yanomami*, habitus scan. Male from Plantain Island in Essequibo River. **27.** New record from Guyana: *Anax amazili*, habitus scan. Female from Chenapau.

floating macrophytes, by Chinese Logging Camp (04°51'17" N, 058°01'40" W, 4 m), 30-ix-2014, N. von Ellenrieder & J. Archer leg. [CSBD; CSCA; RWG]. Present across the Guiana Shield but still not registered from Guyana (Garrison 2009). Like other species in this genus, this damselfly breeds in lentic environments.

Tuberculobasis yanomami (De Marmels, 1992): 1 male (Fig. 26), Guyana, Upper Demerara-Berbice Region, Essequibo River, Plantain Island, 25-iii-1969, W.D. Duckworth & R.E. Dietz leg. [USNM]. Species distribution ranges from Venezuela to northern Brazil (Fig. 53).

Anisoptera

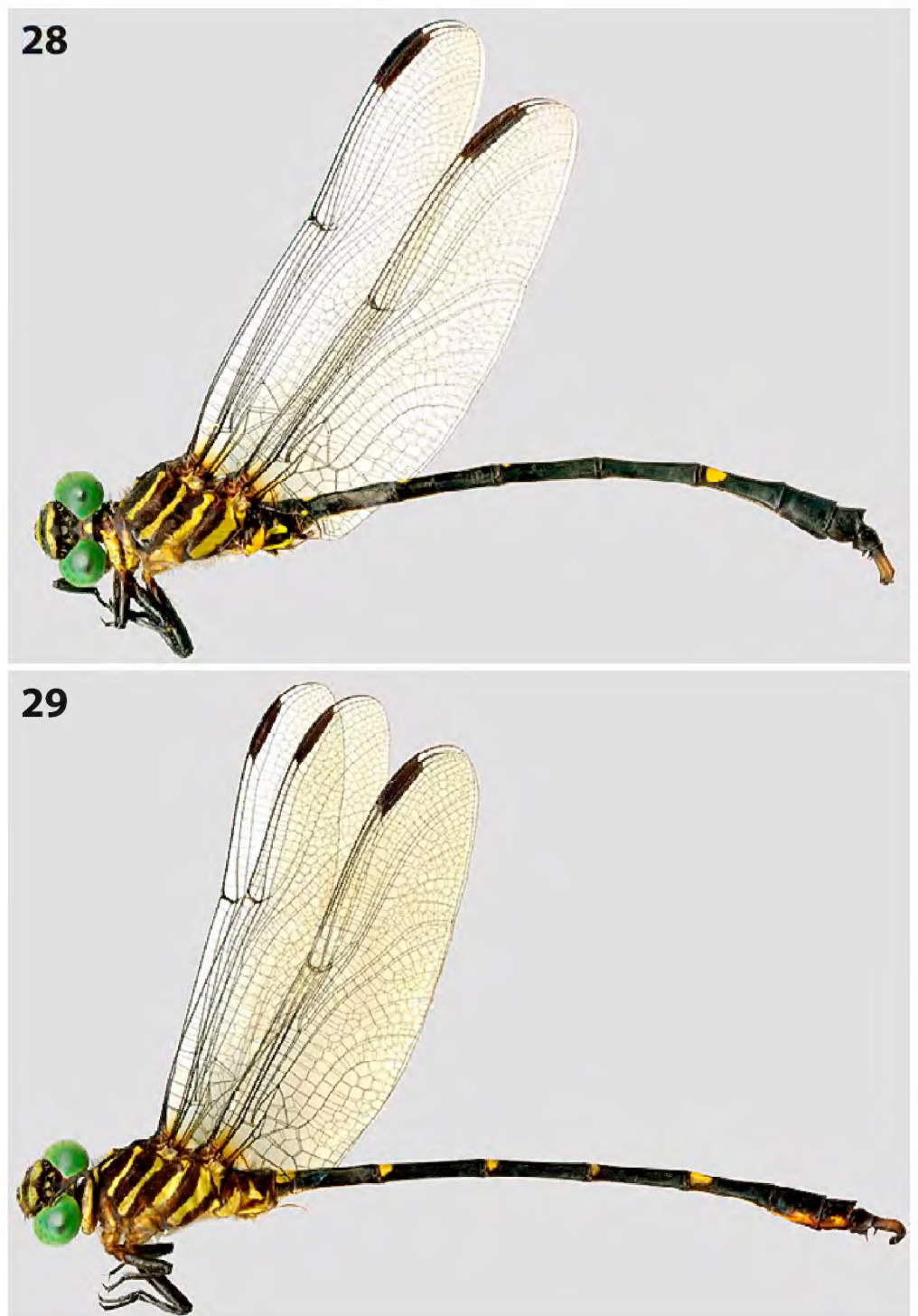
Aeshnidae

Anax amazili (Burmeister, 1839). 1 female (Fig. 27): Guyana, Potaro-Siparuni Region, Chenapau village, ponds and forest trails (04°59'7" N, 059°34'45" W, 445 m), 17-iii-2014, N. von Ellenrieder leg. [CSCA]. This large strong flier ranges from Mexico to Argentina, breeding in temporary lentic habitats.

- Coryphaeschna viriditas*** Calvert, 1952 [CALVERT 1948]
- Gynacantha auricularis*** Martin, 1909 [WILLIAMSON 1923b]
- Gynacantha gracilis*** (Burmeister, 1839) [WILLIAMSON 1923b]
- Gynacantha membranalis*** Karsch, 1891 [WILLIAMSON 1923b]
- Gynacantha mexicana*** Selys, 1868 [WILLIAMSON 1923b]
- Gynacantha nervosa*** Rambur, 1842 [ERICHSON in SCHOMBURGK 1848]
- Gynacantha tenuis*** Martin, 1909 [WILLIAMSON 1923b]
- Neuraeschna costalis*** (Burmeister, 1839) [ERICHSON in SCHOMBURGK 1848 as *Gynacantha ferox*]
- Neuraeschna dentigera*** Martin, 1909 [WILLIAMSON & WILLIAMSON 1930]
- Neuraeschna harpya*** Martin, 1909 [WILLIAMSON & WILLIAMSON 1930]
- Staurophlebia reticulata*** (Burmeister, 1839) [CALVERT 1948]
- Triacanthagyna ditzleri*** Williamson, 1923 [WILLIAMSON 1923b]
- Triacanthagyna satyrus*** (Martin, 1909) [WILLIAMSON 1923b]
- Triacanthagyna septima*** (Selys in Sagra, 1857) [CALVERT 1948]
- Triacanthagyna trifida*** (Rambur, 1842) [ERICHSON in SCHOMBURGK 1848]

Gomphidae

- Aphylla alia*** Calvert, 1948 [CALVERT 1948]
- Aphylla dentata*** Selys, 1859 [SELYS 1894]
- Aphylla molossus*** Selys, 1869 [BELLE 1992]
- Aphylla producta*** Selys, 1854 [SELYS 1854]
- Aphylla theodorina*** (Navás, 1933) [BELLE 1992]
- Archaeogomphus hamatus*** (Williamson, 1918) [CALVERT 1948]
- Cacoides latro*** (Erichson in Schomburgk, 1848) [ERICHSON in SCHOMBURGK 1848]
- Desmogomphus tigrivensis*** Williamson, 1920 [WILLIAMSON 1920]
- Ebegomphus conchinus*** (Williamson, 1916) [WILLIAMSON 1916]
- Ebegomphus demerarae*** (Selys, 1894) [SELYS 1894]
- Phyllocycla bartica*** Calvert, 1948 [CALVERT 1948]
- Phyllocycla modesta*** Belle, 1970 [BELLE 1988]



Figures 28, 29. 28. New record from Guyana: *Phyllogomphoides atlanticus*, habitus scan. Male from Berbice. 29. New record from Guyana: *Phyllogomphoides undulatus*, habitus scan. Male from Berbice.

Phyllocycla ophis (Selys, 1869) [SELYS 1894 as *Aphylla tenuis*; see BELLE 1992]

Phyllocycla signata (Hagen in Selys, 1854) [CALVERT 1948]

Phyllogomphoides andromeda (Selys, 1869) [BELLE 1970]

Phyllogomphoides atlanticus (Belle, 1970). 1 male (Fig. 28): Guyana, East Berbice-Corentyne Region, Berbice River Camp, blackwater stream (04°09'14" N, 058°10'45" W, 92 m), 21-ix-2014, R.W. Garrison & J. Archer leg. [RWG]. This species is known only from the Guiana Shield, with previous records from Suriname and French Guiana (Fig. 54).

Phyllogomphoides fuliginosus (Hagen in Selys, 1854) [Hagen in SELYS 1854]

Phyllogomphoides major Belle, 1984 [SELYS 1894 as *Gomphoides fuliginosa*, see BELLE 1984]

Phyllogomphoides undulatus (Needham, 1944). 4 males (Fig. 29): Guyana, East Berbice-Corentyne Region, Berbice River Camp, stream (04°09'04" N, 058°14'01" W, 83 m), 23-ix-2014, R.W. Garrison & J. Archer leg. [CSBD; CSCA; RWG]. Described from Suriname and known also from Venezuela, French Guiana and northern Brazil (Fig. 54), at the Upper Berbice watershed adults of *P. undulatus* were

30



31



Figures 30,31. 30. New record from Guyana: *Progomphus* sp., habitus scan. Teneral female from Tukait. 31. New record from Guyana: *Zonophora surinamensis*, habitus scan. Male from Konawaruk.

observed patrolling a stream flying fast near the water surface, occasionally perching on emergent branches or sticks.

Progomphus dorsopallidus Byers, 1934 [CALVERT 1948]

Progomphus pygmaeus Selys, 1873 [CALVERT 1905]

Progomphus sp. 1 male, 2 females (Fig. 30): Guyana, Potaro-Siparuni Region, Bay Camp to Chenapau, creek, 18-iii-2014 (05°0'9" N, 059°36'56" W, 461 m), N. von Ellenrieder leg.; same data but Tukeit Trail, bedrock creek (05°11'53" N, 059°27'48" W, 160 m), 29-iii-2014 [CSBD; CSCA]. The three specimens of *Progomphus* collected were all very young freshly emerged adults, which unfortunately did not fully expand nor acquired their characteristic color pattern at the time of preservation. They offer enough evidence to determine them as new (combining absence of sub-basal costal crossveins, presence of a second antehumeral stripe, male cerci recurved with two small apical teeth, female vulvar lamina approximately 0.40 of S9), but a formal and complete description of this species must wait until mature specimens are found.

Zonophora batesi Selys, 1869 [CALVERT 1948]

Zonophora calippus Selys, 1869 [ST. QUENTIN 1973]

Zonophora surinamensis Needham, 1944. 1 male (Fig. 31): Guyana, Potaro-Siparuni Region, Konawaruk headwaters, shaded stream (05°04'51" N, 059°15'59" W, 130 m), 12-ix-2014, R. Mohabie leg. [RWG]. This species was described from a male from the Rio Mapaoni (not Matapaoni in Suriname as stated by BELLE (1983) in the original description), a tributary of the Jari River in the Serra de Tumucumaque, Amapá State, Brazil. Diagnostic characters of the holotype were redescribed and illustrated in detail by BELLE (1966). Another male was later recorded for Suriname (Sipaliwini District, Tafelberg (foot), Geijskeskreek) by BELLE (1972) and from Venezuela by DE MARMELS (1989b). The male collected at the headwaters of the Konawaruk watershed represents the fourth known specimen for this infrequently encountered species (Fig. 54).

Corduliidae

Aeschnosoma elegans Selys, 1870 [GEIJSKES 1970]

Aeschnosoma forcipula Hagen in Selys, 1871 [CALVERT 1948 as *A. peruviana*; see GEIJSKES 1970]

Libellulidae

Anatya guttata (Erichson in Schomburgk, 1848) [ERICHSON in SCHOMBURGK 1848]

Argyrothemis argentea Ris, 1909 [RIS 1919]

Brachymesia herbida (Gundlach, 1889) [CALVERT 1907 as *Cannacria batesii*]

Brechmorhoga praecox (Hagen, 1861) [RIS 1913]

Brechmorhoga praedatrix Calvert, 1909 [RIS 1919]

Dasythemis essequiba Ris, 1919 [RIS 1919]

Diastatops dimidiata (Linnaeus, 1758) [ERICHSON in SCHOMBURGK 1848]

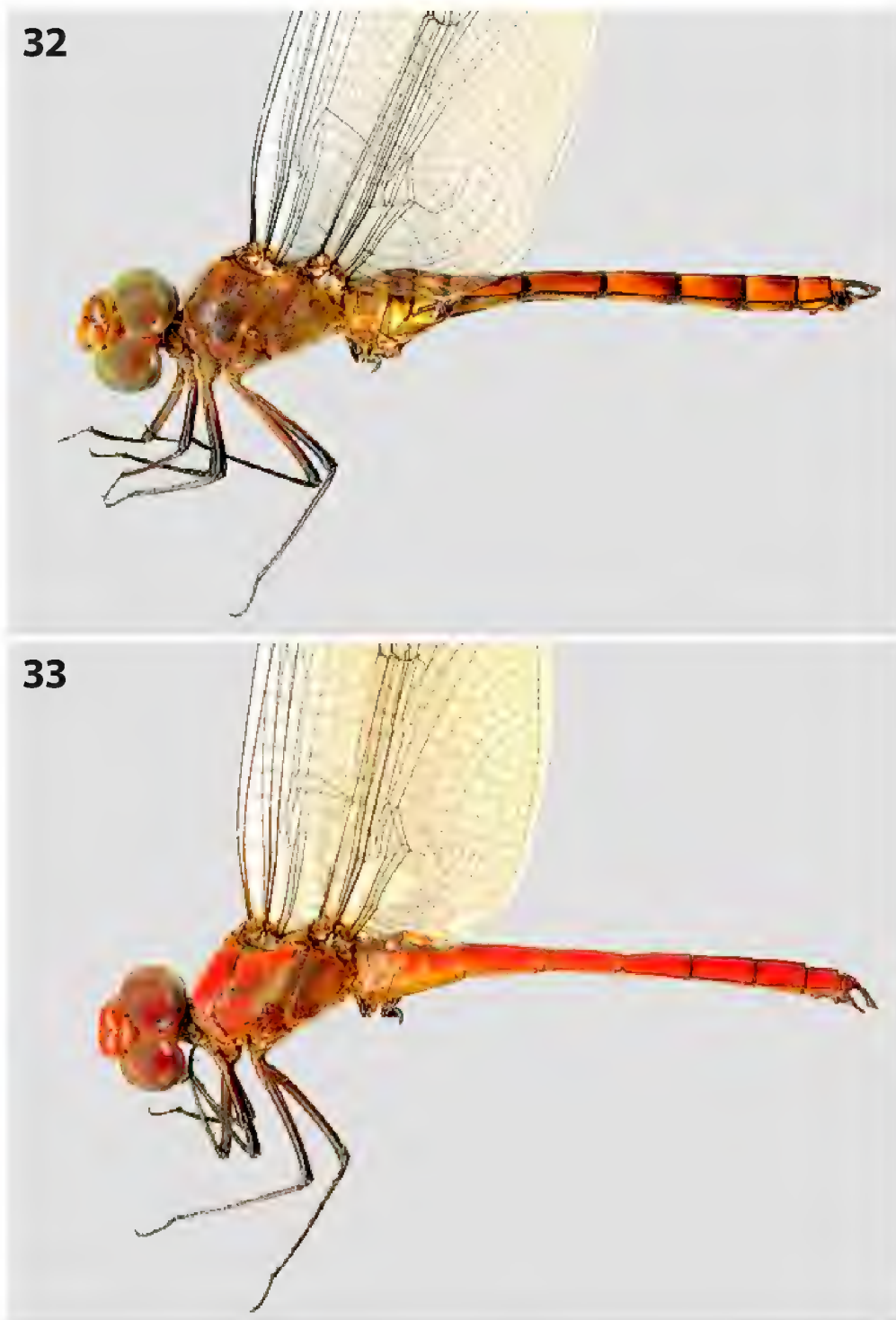
Diastatops estherae Montgomery, 1940 [MONTGOMERY 1940]

Diastatops obscura (Fabricius, 1775) [ERICHSON in SCHOMBURGK 1848 as *D. tincta*]

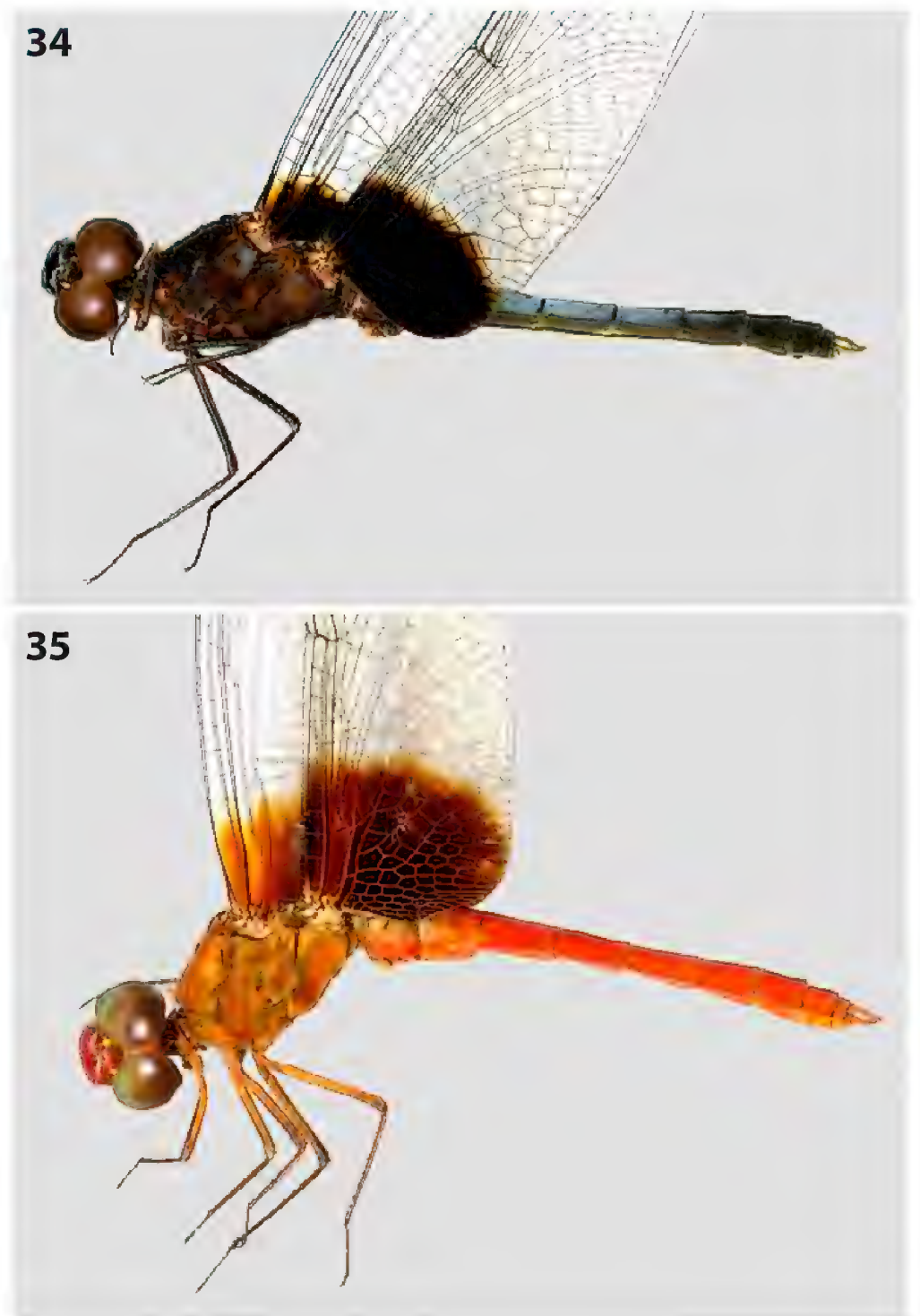
Diastatops pullata (Burmeister, 1839) [ERICHSON in SCHOMBURGK 1848 as *D. fuliginea*]

Dythemis nigra Martin, 1897 [RIS 1919 as *D. multipunctata*; see MEURGEY & POIRON 2011]

Elasmothemis cannacrioides (Calvert, 1906). 7 males (Fig. 32): Guyana, Potaro-Siparuni Region, Upper Potaro Camp to Bay Camp, Potaro River from boat (05°03'15" N, 059°39'49" W, 573 m), 20-iii-2014, N. von Ellenrieder leg.; same data but Elinkwa, creek (05°08'55" N, 059°28'28" W, 438 m), 28-iii-2014, N. von Ellenrieder & W. Washington leg.; same data but Konawaruk headwaters, shaded stream (05°04'51" N, 059°15'59" W, 130 m), 12-ix-2014, R. Mohabie leg. [CSBD; CSCA; RWG]. Ranging from Mexico to Argentina, this riverine species was expected to occur in Guyana.



Figures 32,33. 32. New record from Guyana: *Elasmotheremis cannaeoides*, habitus scan. Male from Elinkwa Creek. 33. New record from Guyana: *Elasmotheremis rufa*, habitus scan. Male from Potaro River.



Figures 34,35. 34. New record from Guyana: *Erythrodiplax lativittata*, habitus scan. Male from Konawaruk. 35. Record from Guyana: *Erythrodiplax famula*, habitus scan. Male from Kaieteur.

Elasmotheremis rufa De Marmels, 2008. 1 male (Fig. 33): Guyana, Potaro-Siparuni Region, Upper Potaro Camp to Bay Camp, Potaro River from boat (05°03'15" N, 059°39'49" W, 573 m), 20-iii-2014, N. von Ellenrieder leg. [CSCA]. Recently described (DE MARMELS 2008) from Amazonas State in Venezuela and recorded also from Suriname (VON ELLENRIEDER 2011; Fig. 55), this species inhabits the same rivers as its sibling species *E. cannaeoides*, and their males patrol territories side by side from twigs and branches emerging from the water in areas with strong current.

Elasmotheremis williamsoni (Ris, 1919) [Ris 1919]

Elga leptostyla Ris, 1909 [Ris 1919]

Erythemis attala (Selys in Sagra, 1857) [Ris 1919]

Erythemis credula (Hagen, 1861) [Ris 1919]

Erythemis haematogastra (Burmeister, 1839) [CALVERT 1907]

Erythemis peruviana (Rambur, 1842) [ERICHSON in SCHOMBURGK 1848 as *Libellula bicolor*]

Erythemis plebeja (Burmeister, 1839) [Ris 1919]

Erythemis vesiculosa (Fabricius, 1775) [ERICHSON in SCHOMBURGK 1848]

Erythrodiplax amazonica Sjöstedt, 1918 [Ris 1919 as *E. lenti*; see BORROR 1942]

Erythrodiplax basalis (Kirby, 1897) [Ris 1919]

Note. *Libellula erratica* Erichson in Schomburgk, 1848 is most likely a synonym of this species; see GARRISON & VON ELLENRIEDER 2016

Erythrodiplax castanea (Burmeister, 1839) [Ris 1911a]

Erythrodiplax famula (Erichson in Schomburgk, 1848) [ERICHSON in SCHOMBURGK 1848]

Erythrodiplax fervida (Erichson in Schomburgk, 1848) [ERICHSON in SCHOMBURGK 1848]

Erythrodiplax fusca (Rambur, 1842) [Ris 1919]

Erythrodiplax latimaculata Ris, 1911 [CALVERT 1948]

Erythrodiplax lativittata Borror, 1842. 18 males, 5 females (Fig. 34): Guyana, Potaro-Siparuni region, Konawaruk watershed, Blackwater Landing, stream, muddy pool and trail (05°04'09" N, 059°12'03" W, 68 m), 10-ix-2014,

R.W. Garrison & R. Mohabie leg.; same data but stream on trail into lake (05°04'15" N, 059°12'46" W, 85 m), 11-ix-2014; same data but river and shaded stream (05°03'54" N, 059°12'46" W, 100 m), 12-ix-2014 [CSBD; CSCA; RWG]. This largely black species with a blue pruinose abdomen in mature males was described by BORROR (1942) as a subspecies of the orange colored *E. famula* (Erichson in Schomburg, 1848) (Fig. 35). However, DE MARMELS (1989a) recorded both taxa from one locality (road from San Carlos to Solano, Venezuela) and their distributions show considerable overlap (Fig. 55) suggesting that both should be considered as separate species. *Erythrodiplax lativittata* has been recorded from northern Brazil, Colombia, Venezuela, and Peru but not yet from the Guianas.

Erythrodiplax laurentia Borrer, 1942 [CALVERT 1906 as *E. erichsoni*; see BORROR 1942]

Erythrodiplax maculosa (Hagen, 1861) [CALVERT 1948]

Note. Old literature records of *E. ochracea* (Burmeister, 1839) from Guyana correspond to *E. fervida* (see BORROR 1942).

Erythrodiplax paraguayensis (Förster, 1905) [BORROR 1942]

Erythrodiplax transversa Borrer, 1957 [PAULSON 2017, based on specimen at DRP: Guyana, Cuyuni-Mazaruni Region, Upper surface of Kamarang plateau, Imbaimadai, 26–29-vi-1971, A.J. & T.W. Donnelly leg.]

Erythrodiplax umbrata (Linnaeus, 1758) [ERICHSON in SCHOMBURGK 1848]

Erythrodiplax unimaculata (De Geer, 1773) [ERICHSON in SCHOMBURGK 1848]

Erythrodiplax venusta (Kirby, 1897) [PAULSON 2017, based on specimen at DRP: Guyana, Upper Takutu-Upper Essequibo Region, Rupununi, Manari River near Lethem, 21–24-vi-1971, A.J. & T.W. Donnelly leg.]

Fylgia amazonica Kirby, 1889 [CALVERT 1948]

Gynothemis pumila (Karsch, 1890) [RIS 1919]

Gynothemis uniseta Geijskes, 1972. 2 females (Fig. 36): Guyana, Potaro-Siparuni Region, Upriver Upper Potaro Camp, creek (05°06'31" N, 059°38'38" W, 661 m), 22-iii-2014, N. von Ellenrieder leg. [CSBD; CSCA]. Females of this small libellulid were found flying back and forth at great speed over a little creek in the manner usually observed in males of *Macrothemis*. Its known distribution from Suriname and French Guiana is increased now to include Guyana (Fig. 56).

Idiataphe amazonica (Kirby, 1889) [RÁCENIS 1969]

Idiataphe batesi (Ris, 1913) [RIS 1919]

Idiataphe longipes (Hagen, 1861) [RIS 1919]

Libellula herculea Karsch, 1889 [RIS 1910]

Macrothemis belliata Belle, 1987. 1 male, 1 female (Fig.



Figures 36, 37. 36. New record from Guyana: *Gynothemis uniseta*, habitus scan. Female from Potaro. 37. New record from Guyana: *Macrothemis belliata*, habitus scan. Female from Elinkwa Creek.

37): Guyana, Potaro-Siparuni Region, Elinkwa, creek (05°08'55" N, 059°28'28" W, 438 m), 28-iii-2014, N. von Ellenrieder & W. Washington leg. [CSCA]. So far known only from its original description based on one single male from Suriname (BELLE 1987; Fig. 56). During this survey a pair was found flying fast over rapids in a shaded section of a creek.

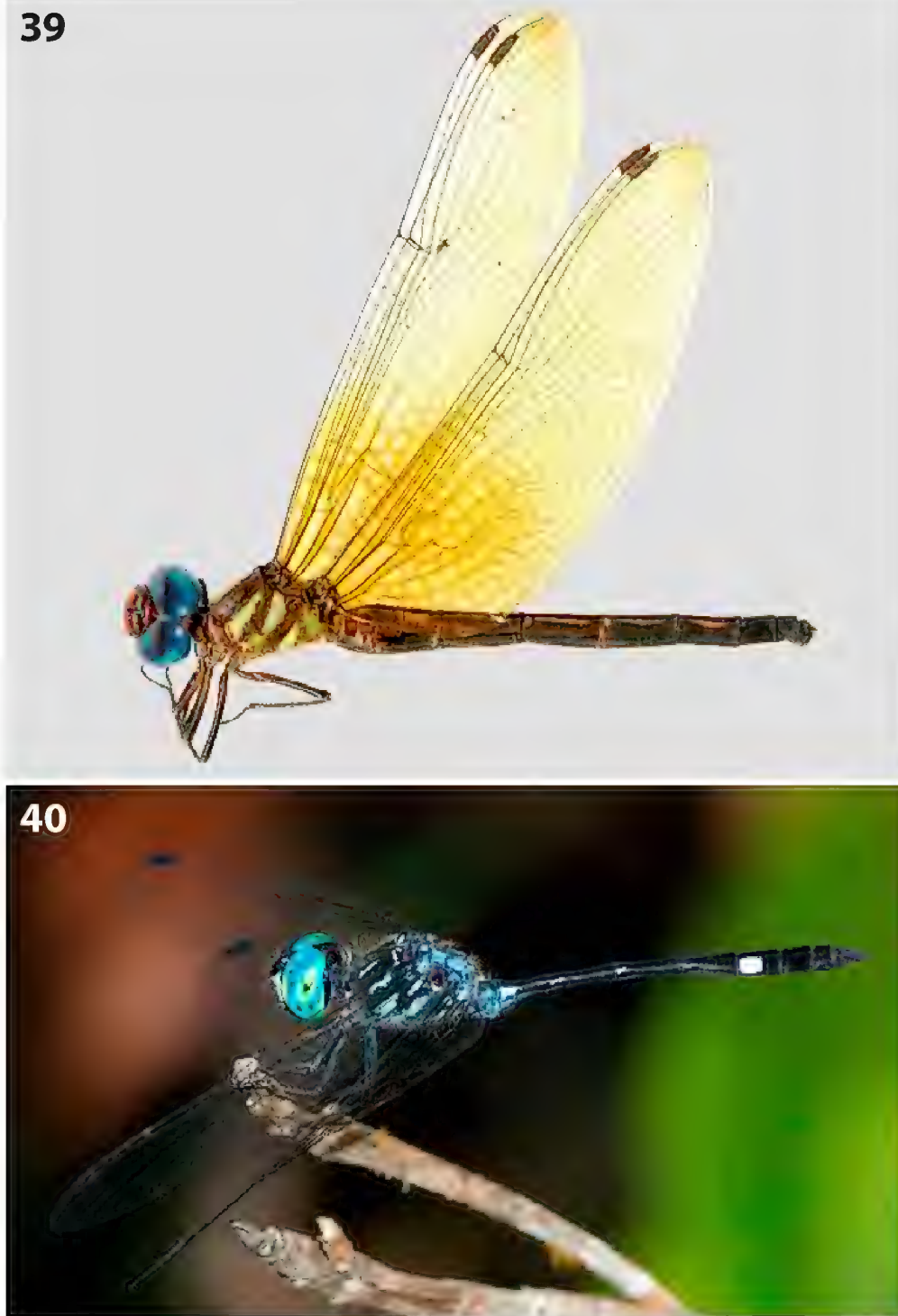
Macrothemis cynthia Ris, 1913. 1 male (Fig. 38): Guyana, Potaro-Siparuni Region, Tukeit Trail, bedrock creek (05°11'53" N, 059°27'48" W, 160 m), 29-iii-2014, N. von Ellenrieder leg. [CSCA]. Males of this relatively robust *Macrothemis* were observed flying fast near the water over rapid sections of creeks. The species was previously known from Brazil and Venezuela (RIS 1913; DE MARMELS 1990b; Fig. 57) showing an apparent disjunct distribution, which is most likely an artifact due to limited collecting in the intervening area of the Amazon forest and Guiana Shield.

Macrothemis flavescens (Kirby, 1897) [RIS 1919]

Macrothemis hemichlora (Burmeister, 1839). 1 female (Fig. 39): Guyana, Potaro-Siparuni Region, Bay Camp to Chenapau, creek (05°00'09" N, 059°36'56" W, 461 m),



Figure 38. New record from Guyana: *Macrothemis cynthia*, habitus scan. Male from Tukait.



Figures 39,40. 39. New record from Guyana: *Macrothemis hemichlora*, habitus scan. Female from Chenapau. 40. New record from Guyana: *Micrathyria catenata*, field photograph (NvE). Male from Kaieteur.

18-iii-2014, N. von Ellenrieder leg. [CSCA]. A widespread species in the Neotropical region, extending from Mexico south to Argentina.

Macrothemis idalia Ris, 1919 [Ris 1919]

Macrothemis polyneura Ris, 1913 [Ris 1919]

Miathyria marcella (Selys in Sagra, 1857) [Ris 1919]

Miathyria simplex (Rambur, 1842) [Ris 1919]

Micrathyria aequalis (Hagen, 1861) [Ris 1919]

Micrathyria artemis Ris, 1911 [Ris 1919]

Micrathyria atra (Martin, 1897) [Ris 1911a]

Micrathyria catenata Calvert, 1909. 10 males (Fig. 40): Guyana, Potaro-Siparuni Region, Kaieteur Top, pond with aquatic vegetation (05°10'38" N, 059°29'17" W, 470 m), 28-iii-2014, N. von Ellenrieder leg.; East Berbice-Corentyne Region, ponds by sandy blackwater stream in primary forest (04°45'17" N, 058°00'24" W, 8 m), 28-ix-2014, N. von Ellenrieder & J. Archer leg.; Upper Demerara-Berbice Region, blackwater stream with open canopy and pond with floating macrophytes, by Chinese Logging Camp (04°51'17" N, 058°01'40" W, 4 m), 30-ix-2014 [CSBD; CSCA; RWG].

Found frequently at vegetated ponds from Costa Rica to Argentina.

Micrathyria didyma (Selys in Sagra, 1857) [Ris 1919]

Micrathyria hippolyte Ris, 1911 [Ris 1911a]

Micrathyria mengeri Ris, 1919 [Ris 1919]

Micrathyria ocellata Martin, 1897 [Ris 1919]

Micrathyria pseudeximia Westfall, 1992 [Ris 1919 as *M. eximia* (Kirby, 1897); based on Ris' (1919) reported distribution of "*M. eximia*" and comparison of Ris (1911a) description and illustrations of that species which match WESTFALL's (1992) description of *M. pseudeximia*].

Here we confirm the presence of this species in Guyana based on specimens from East Berbice-Corentyne Region: 2 males, Berbice River Camp, stagnant creek (04°09'04" N, 058°13'35" W, 88 m), 21-ix-2014, R.W. Garrison & J. Archer leg.; same data but sandy blackwater creek in primary forest with associated pools, upstream from camp (04°45'26" N, 058°00'16" W, 28 m), 29-ix-2014, N. von Ellenrieder & J. Archer leg. [CSBD; CSCA; RWG].

Micrathyria spinifera Calvert, 1909 [Ris 1919]

Micrathyria tibialis Kirby, 1897 [Ris 1919]

Misagria bimacula Kimmins, 1943 [KIMMINS 1943]

Misagria parana Kirby, 1889 [Ris 1910]

Nephepeltia phryne (Perty, 1833) [Ris 1919]

Oligoclada abbreviata (Rambur, 1842) [Ris 1919 as *O. raineyi*, see GELJSKES 1984]

Oligoclada amphinome Ris, 1919 [Ris 1919]

Oligoclada pachystigma Karsch, 1890 [Ris 1919]

Oligoclada rhea Ris, 1911. 1 male (Fig. 41): Guyana, Potaro-Siparuni Region, Amacua, blind side river channel with abundant floating vegetation (05°09'10" N, 059°30'12" W,



Figure 41. New record from Guyana: *Oligoclada rhea*, habitus scan. Male from Amacua.

440 m), 28-iii-2014, N. von Ellenrieder & W. Washington leg. [CSCA]. Distributed from the Guianas south to Bolivia, this species was found perching on floating macrophytes at an itabú.

Oligoclada risi Geijskes, 1984 [Ris 1911 as *O. abbreviata*, see GEIJSKES 1984]

Oligoclada sylvia (Kirby, 1889) [BORROR 1931]

Oligoclada walkeri Geijskes, 1931 [BORROR 1931]

Orthemis aequilibris Calvert, 1909 [Ris 1919]

Orthemis attenuata (Erichson in Schomburgk, 1848) [ERICHSON in SCHOMBURGK 1848]

Orthemis biolleyi Calvert, 1906 [Ris 1919]

Orthemis concolor Ris, 1919 [Ris 1919]

Orthemis cultriformis Calvert, 1899 [Ris 1919]

Orthemis discolor (Burmeister, 1839) [ERICHSON in SCHOMBURGK 1848]

Note. We follow DE MARMELS (1988a) in considering old literature records of *Orthemis ferruginea* Fabricius, 1775 from South America to correspond to *O. discolor*.

Orthemis schmidtii Buchholz, 1950. 7 males, 6 females (Fig. 42): Guyana, Potaro-Siparuni Region, Konawaruk watershed, Blackwater Landing, stream, muddy trail and trail (05°04'09" N, 059°12'03" W, 68 m), 10-ix-2014, R.W. Garrison & R. Mohabie leg.; same data but Naril, stream and muddy roadside pool (05°07'08" N, 059°06'47" W, 63 m), 13-ix-2014; same data but Naril Camp, roadside pools (05°07'28" N, 059°07'41" W, 70 m), 15-ix-2014; East Berbice-Corentyne Region, Berbice River Camp, Berbice River (04°09'06" N, 058°13'44" W, 95 m), 22-ix-2014, R.W. Garrison & J. Archer leg.; same data but sandy blackwater creek in primary forest with associated pools, upstream from camp (04°45'26" N, 058°00'16" W, 28 m), 29-ix-2014, N. von Ellenrieder & J. Archer leg.; Upper Demerara-Berbice Region, sandy blackwater stream with open canopy and pond with floating macrophytes, by Chinese Logging Camp (04°51'17" N, 058°01'40" W, 4 m), 30-ix-2014, N. von Ellenrieder & J. Archer leg. [CSBD; CSCA; RWG]. The species name has been applied to populations whose mature males



Figure 42. New record from Guyana: *Orthemis schmidtii*, field photograph (RWG). Male from Blackwater Landing.



Figures 43, 44. 43. New record from Guyana: *Perithemis cornelia*, habitus scan. Male from Berbice. 44. New record from Guyana: *Perithemis mooma*, habitus scan. Male from Berbice.

possess a bright carmine red abdomen coupled with, in the female, strongly marked reticulate stripes on the sides of the thorax. It is unclear whether material from Guyana and elsewhere in South America is conspecific with the holotype female from Peru. Adults frequented partially shaded to fully exposed temporary dirt road puddles where they flew together with *O. discolor*, *O. biolleyi*, and *O. cultriformis*.

Note. CALVERT (1906) mentioned *Orthemis sulphurata* Hagen, 1868 from "British Guiana" but providing neither a locality nor descriptive notes. He did not examine the type of this species, a female from Guayaquil in Ecuador which is lost (CALVERT 1899). Therefore we consider his records of this species as doubtful and exclude this species name from the species list from the country.

Pantala flavescens (Fabricius, 1798) [Ris 1919]

Perithemis cornelia Ris, 1910. 3 males (Fig. 43): Guyana, East Berbice-Corentyne Region, Berbice River Camp, Berbice River (04°09'06" N, 058°13'44" W, 95 m), 22-ix-2014, R.W. Garrison & J. Archer leg.; same data but stream (04°09'04" N, 058°14'01" W, 83 m), 23-ix-2014 [CSCB; CSCA; RWG]. This species of Amberwing dragonfly is widely distributed in the Guianan and Amazonian forests from Venezuela south to Bolivia, and its occurrence in Guyana was expected.

Perithemis lais (Perty, 1833) [Ris 1919]

Perithemis mooma Kirby, 1889. 8 males (Fig. 44): Guyana, East Berbice-Corentyne Region, Berbice River Camp, road and trail (04°09'06" N, 058°13'44" W, 95 m), 21-ix-2014, R.W. Garrison & J. Archer leg.; same data but stagnant creek (04°09'04" N, 058°13'35" W, 88 m); same data but ponds by sandy blackwater creek (04°45'17" N, 058°00'24" W, 8 m), 28-ix-2014, N. von Ellenrieder & J. Archer leg.; same data but pools by sandy blackwater creek in primary forest, upstream from camp (04°45'26" N, 058°00'16" W, 28 m), 29-ix-2014; Upper Demerara-Berbice Region, sandy blackwater stream with open canopy and pond with floating macrophytes, by Chinese Logging Camp (04°51'17" N, 058°01'40" W, 4 m), 30-ix-2014, N. von Ellenrieder & J.



Figures 45, 46. 45. New record from Guyana: *Sympetrum roraimae*, photograph of male genital ligula in lateral view. Incomplete male from Mt. Roraima. 46. New record from Guyana: *Sympetrum roraimae*, photograph. Incomplete specimen from Mt. Roraima.

Archer leg. [CSCB; CSCA; RWG]. Distributed from Mexico to Argentina, this Amberwing dragonfly is ubiquitous at slow moving or lentic freshwater environments throughout the Neotropical region.

Perithemis thais Kirby, 1889 [Ris 1919]

Planiplax phoenicura Ris, 1912 [Ris 1919]

Rhodopygia cardinalis (Erichson in Schomburgk, 1848) [ERICHSON in SCHOMBURGK 1848]

Rhodopygia geijskesi Belle, 1964 [Belle 1998]

Rhodopygia hollandi Calvert, 1907 [Calvert 1907]

Rhodopygia pruinosa Buchholz, 1953 [Belle 1998]

Sympetrum roraimae De Marmels, 1988. 1 male, 1 incomplete specimen (Figs. 45, 46): Guyana, Cuyuni-Mazaruni Region, Mount Roraima, 2,620 m, viii-x-1898, J.J. Quelch & F.V. McConnell leg. [BMNH]. This species was described based on specimens from Kukenam Plateau and Mount Roraima in Venezuela and Brazil near the border with Guyana, from elevations ranging from 2,100 to 2,640 m. a.s.l. According to DE MARMELS (1988b) *S. roraimae* is superficially similar to *S. gilvum*, the latter species being pan-Andean and not occurring within the Guiana Shield. At our request, Benjamin Price kindly searched for the specimens recorded by KIRBY (1900) as *S. gilvum* from Mt. Roraima in British Guiana, at 8,600 feet (= 2,620 m) deposited at the BMNH, and located two partial specimens, one missing the entire abdomen, the second one a male missing abdominal segments III–X. The photographs that he kindly



Figures 47, 48. 47. New record from Guyana: *Tauriphila argo*, habitus scan. Male from CEIBA Biological Station. 48. New record from Guyana: *Tramea abdominalis*, habitus scan. Male from Argentina, Salta, Los Tordillos [CSCA].

sent us (Figs. 45–46) confirm that the specimens represent *S. roraimae* and not *S. gilvum*, given the much longer genital lobe and outer branch of hamule that allow distinguishing this species from *S. gilvum*. So far this species is only known from Kukenam Plateau and Mount Roraima, in the border between Venezuela, Brazil, and Guyana (Fig. 56).

Tauriphila argo (Hagen, 1869). 2 females (Fig. 47), Guyana, Demerara-Mahaica Region, CEIBA Biological Station, 18-viii-2012, M. Sánchez leg. [RWG]. This species is widely distributed from Mexico south to Argentina, and its presence in Guyana was expected.

Tholymis citrina Hagen, 1867 [Ris 1919]

Tramea abdominalis (Rambur, 1842). 1 male: Guyana, Potaro-Siparuni Region, Kaieteur Top near reception center, 24-iii-2014 (05°10'39" N, 059°29'17" W, 467 m) [seen only]. This is the only *Tramea* with an unstriped thorax and bright red abdomen (Fig. 48) in South America, ranging from Mexico to Argentina. It was seen perching on shrubs and bushes in clearings and near pools.



Figure 49. New record from Guyana: *Tramea binotata*, habitus scan. Male from Kaieteur.

Tramea binotata (Rambur, 1842). 1 male (Fig. 49): Guyana, Potaro-Siparuni Region, Kaieteur Top near reception center; trickles, 24-iii-2014 (05°10'39" N, 059°29'17" W, 467 m) [CSCA]. Sharing habitat and distribution with *T. abdominalis*, this species was observed flying and perching on top of the Kaieteur Plateau.

Tramea calverti Muttkowski, 1910 [Ris 1913b as *T. cophysa* form a, see De Marmels & Rácenis 1982]

Tramea cophysa Hagen, 1867 [Ris 1919 as *T. cophysa* form c, see DE MARMELS & RÁCENIS 1982]



Figure 50. New record from Guyana: *Ypirangathemis calverti*, field photograph (NvE). Male from Kaieteur.

Tramea rustica De Marmels & Rácenis, 1982 [DE MARMELS & RÁCENIS 1982]

Uracis fastigiata (Burmeister, 1839) [ERICHSON in SCHOMBURGK 1848]

Uracis imbuta (Burmeister, 1839) [ERICHSON in SCHOMBURGK 1848]

Uracis infumata (Rambur, 1842) [Ris 1919]

Uracis oviposatrix Calvert, 1909 [Ris 1911a]

Ypirangathemis calverti Santos, 1945. 8 males, 3 females (Fig. 50): Guyana, Potaro-Siparuni Region, Kaieteur Top, pond with aquatic vegetation (05°10'38" N, 059°29'17"

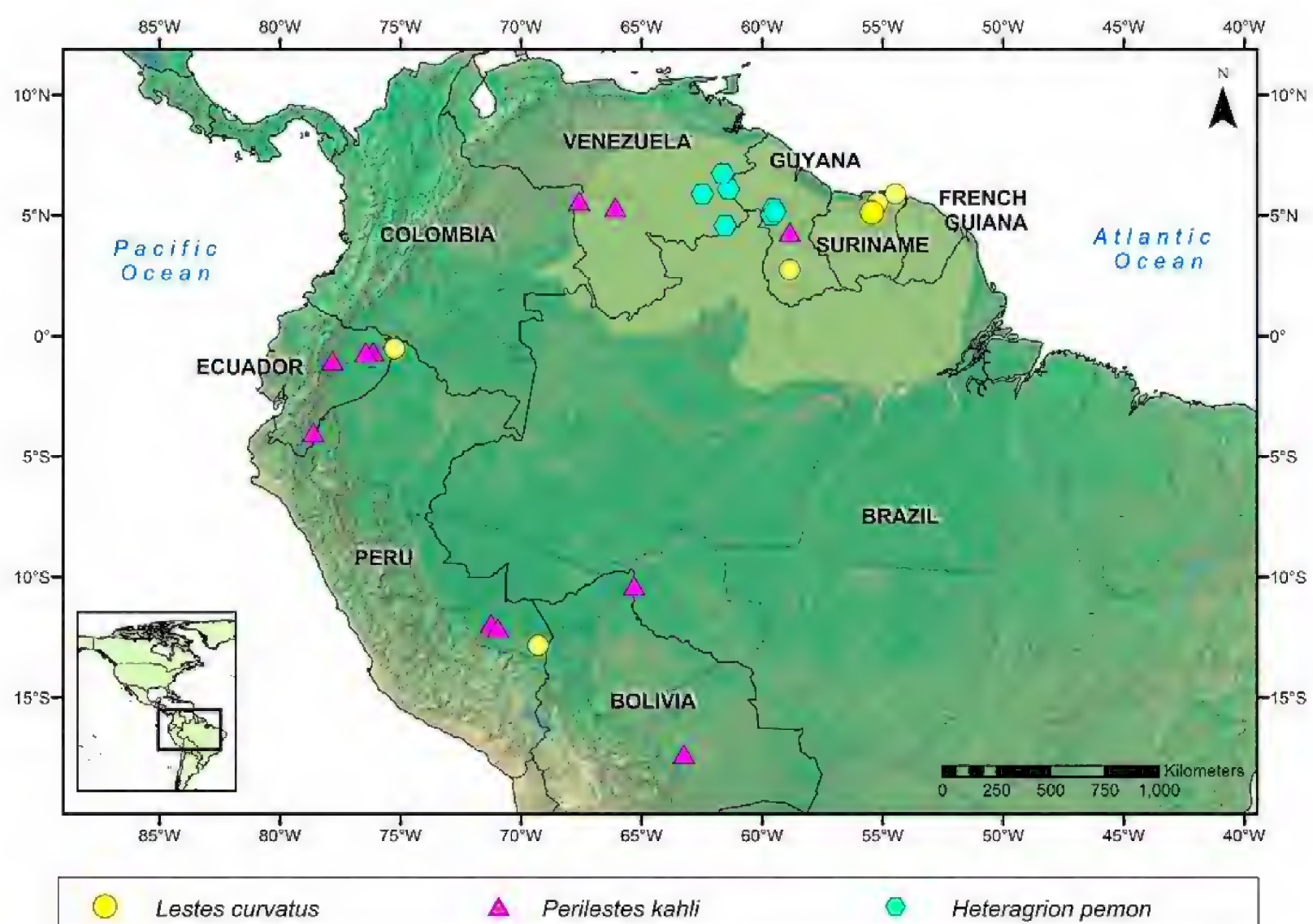


Figure 51. Distribution of species recorded for the first time from Guyana showing a considerable range extension. Shaded area: Guiana Shield.

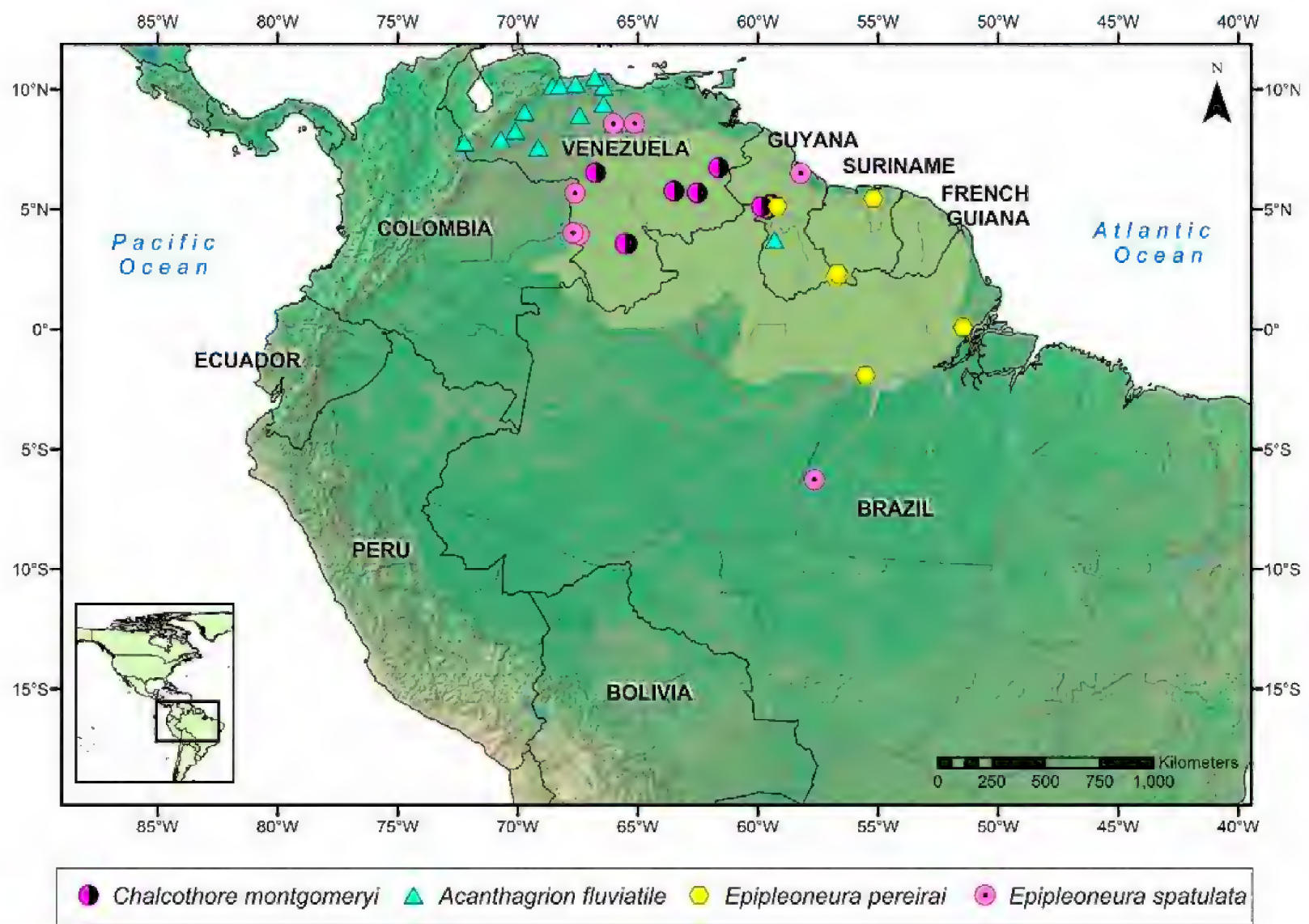


Figure 52. Distribution of species recorded for the first time from Guyana showing a considerable range extension. Shaded area: Guiana Shield.

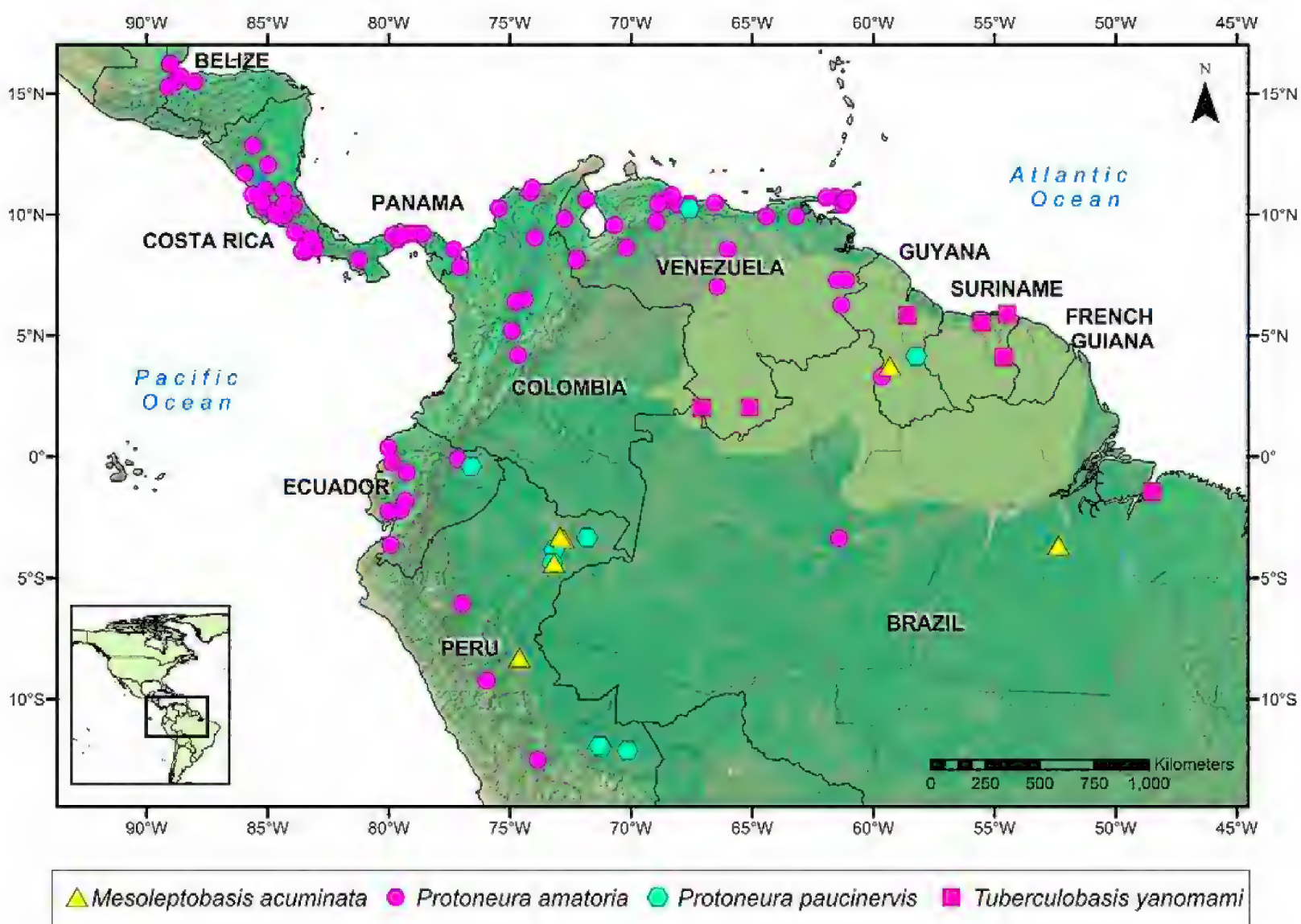


Figure 53. Distribution of species recorded for the first time from Guyana showing a considerable range extension. Shaded area: Guiana Shield.

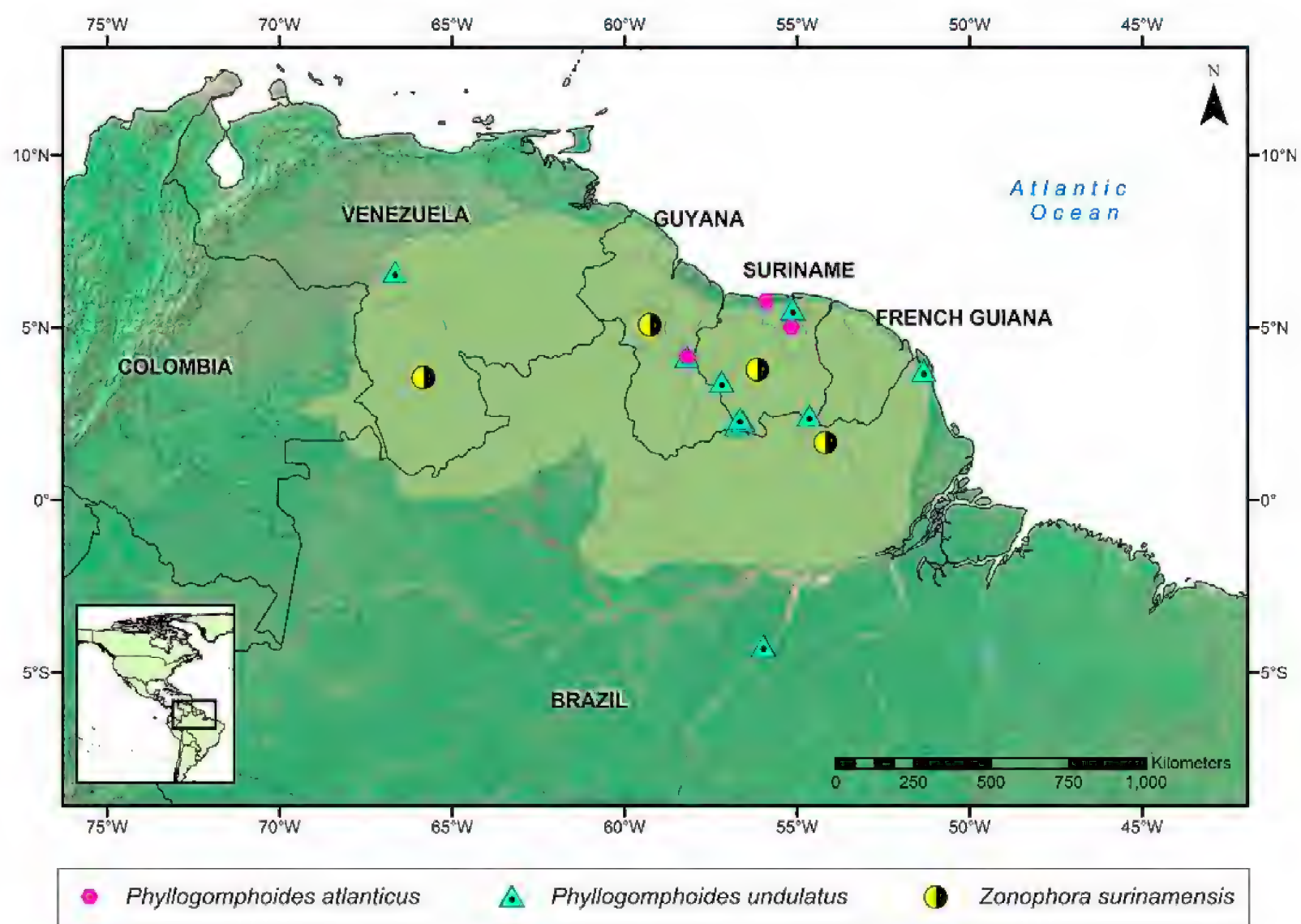


Figure 54. Distribution of species recorded for the first time from Guyana showing a considerable range extension. Shaded area: Guiana Shield.

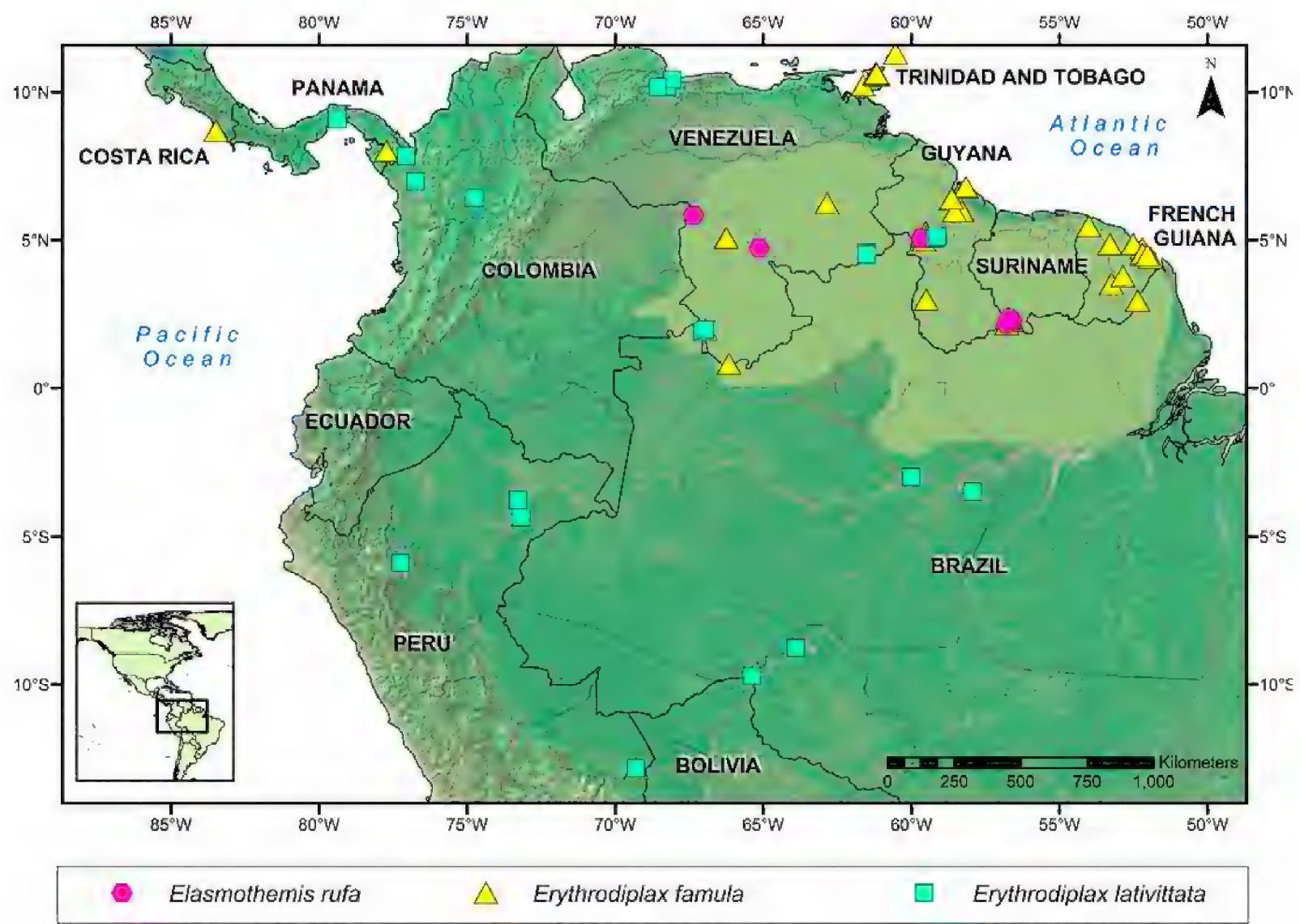


Figure 55. Distribution of species recorded for the first time from Guyana showing a considerable range extension. Shaded area: Guiana Shield.

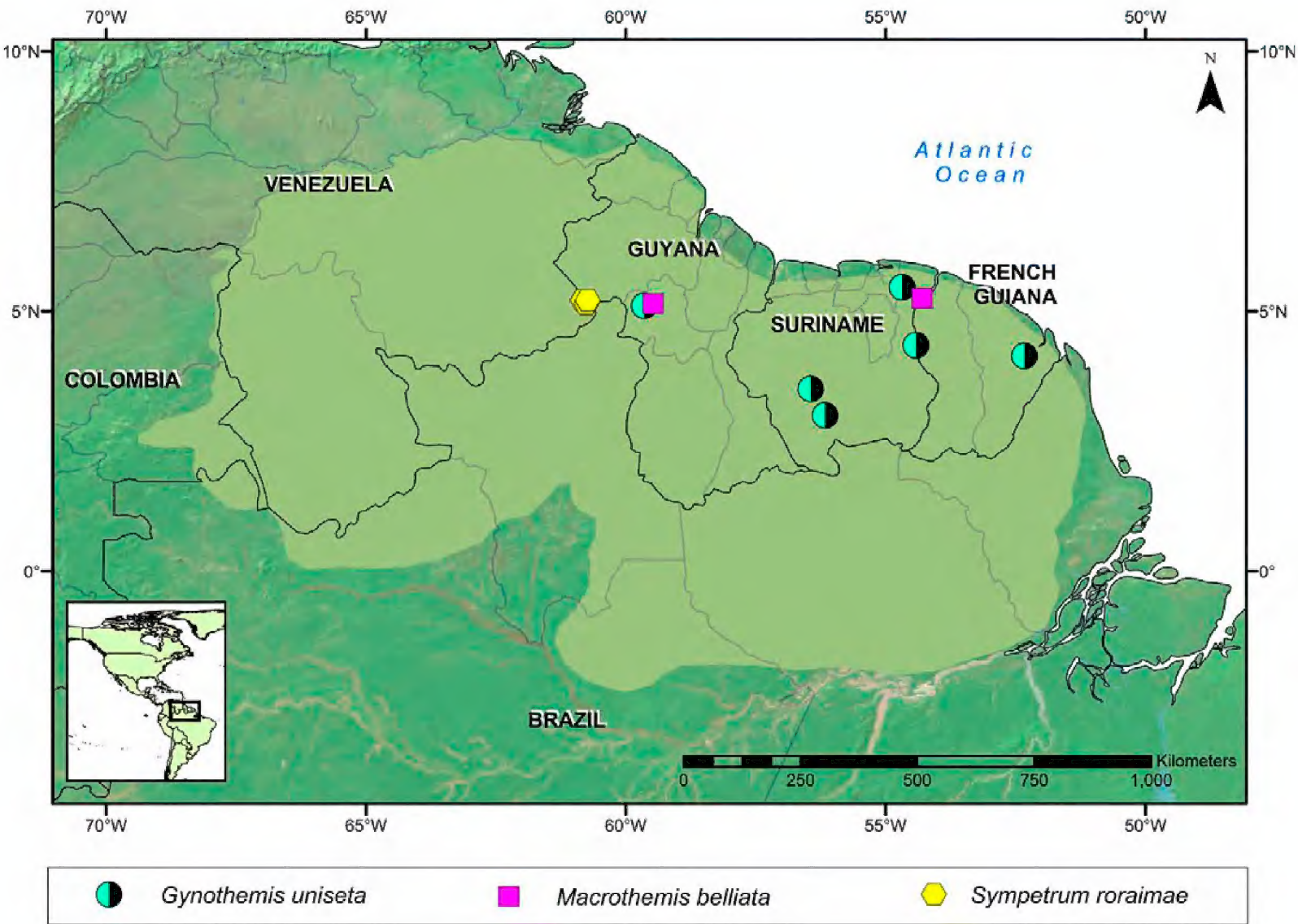


Figure 57. Distribution of species recorded for the first time from Guyana showing a considerable range extension. Shaded area: Guiana Shield.



Figure 57. Distribution of species recorded for the first time from Guyana showing a considerable range extension. Shaded area: Guiana Shield.

W, 470 m), 24-iii-2014, N. von Ellenrieder leg.; same data but trickles, 27–28-iii-2014 (05°10'39" N, 059°29'17" W, 467 m) [CSBD; CSCA; RWG]. Described from southeastern Brazil, this monotypic genus was also later recorded from southern Venezuela (DE MARMELS 1990b) and the Amazon in Brazil (A.P. Pinto, pers. comm.; Fig. 57). A.P. Pinto kindly photographed the habitus, appendages, and genitalia of the holotype and paratype of this species deposited at the Museu do Rio de Janeiro, which show no consistent differences with the specimens found in Guyana, which are therefore considered conspecific. With their male banded wings and extremely long female vulvar plate, adults superficially resemble species of the genus *Uracis*, but behave like those of the genus *Erythrodiplax* fluttering around trickles, swampy areas, pools, and ponds, and perching near the ground on grasses and bushes.

Zenithoptera fasciata (Linnaeus, 1758) [ERICHSON in SCHOMBURGK 1848, as *Diastatops fasciata*]

DISCUSSION

Compared to the total species number of odonates registered from neighboring countries, more than 500 from Venezuela (DE MARMELS 1990b, 2015) and almost 300 from Suriname (BELLE 2002; VON ELLENRIEDER 2011), the 238 species recorded for Guyana still constitute a strikingly low number considering the diversity of habitats and topography that Guyana hosts, and further sampling will undoubtedly increase it further.

ACKNOWLEDGMENTS

Our gratitude to Rosser W. Garrison for his critical reading of the manuscript; to Jürg De Marmels and an anonymous reviewer for their comments and corrections on the manuscript; to Benjamin Price, curator at the BMNH, for looking for and photographing the two specimens of *Sympetrum* from Mt. Roraima in Guyana; to Bill Mauffray, curator of the FSCA, for photographing the male of *Euthore* recorded from Guyana; and to Ângelo P. Pinto for sending photographs of the type specimens of *Ypirangathemis calverti* and sharing unpublished locality data. The senior author thanks WWF Guyana and Global Wildlife Conservancy for inviting her to participate in the 2014 BAT surveys, and Wenceslaus Washington, Nadine Johnson, Regius Edwards, Louis Skybar, Lewis Skybar, Rupert Williams, Paul Benjamin, Richie Mohabie, Joemaine Archer, and Rosser W. Garrison for their assistance in the field and specimen collection. Junior authors thank Iwokrama Research Center for permission to visit the station. Funding for EIS was obtained from STINT (Sweden) and the Swedish Research Council (VR).

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Authors' contributions: NvE revised literature and examined material in collections to compose the list, collected specimens, photographed specimens in the field, performed color scans of new records, confirmed identifications of recent specimens, composed plates and maps, and provided taxonomic and biological notes for new records; BW and ES collected specimens, photographed specimens in the field, and provided biological notes for the most recent records.

Received: 31 January 2017

Accepted: 22 March 2017

Academic editor: Alonso Ramírez